American Druggist

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THIRTY-SIXTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, AT DETROIT.

Monday, Sept. 3d, 1888.

President J. U. Lloyd called the meeting of the American Pharmaceutical Association to order at 3:20 P.M., on September 3d, in the Detroit Light Infantry Armory, Detroit, Mich., and introduced Rev. C. R. Henderson, who delivered a prayer, the members standing meanwhile. The meeting was then declared open and was addressed by the Hon. William C. Maybury who, in the name of the Mayor and the people of Detroit, welcomed the Association, speaking of the pharmaceutical manufacturing laboratories of Detroit as the pride of their city. Referring to the exhibit, with its wealth of beauty, he felt the traditions of his boyhood were fast being swept away. The time-honored bunch of catnip and other nauseous herbs were no longer the most prominent things that greeted the eye when visiting the apothecaries' shops, and it is now not necessary to judge of the virtue of a medicine by its bitterness of taste. Instead of screwing up the face, and dreading the nauseous dose, as was the custom years ago, now a man will walk up to the counter and take his innocent-looking capsule with as little concern as he will his soda-water. He wondered where the mystic compounder of his boyhood days had gone, who, when the prescription was handed to him, went behind the barrier, and, while the patient was waiting, awed by the solemnity of the occasion, prepared the mystic compound.

Now the time had come when all mysteries were being opened to humanity. The druggist of to-day was allowing mystery to be replaced by greater skill and education. Thus the labors of the physician were aided by the knowledge of the druggist, and they realize that there is no labor for the individual like that which rises to the dignity of alleviating the sufferings of human life.

Mr. Alexander, of St. Louis, in a few well-chosen words, responded for the Association, returning thanks for the cordial welcome.

J. F. Judge, of Cincinnati, was called upon to read the President's address, which was a long document containing many valuable suggestions, which, upon motion of J. M. Good, of St. Louis, was referred to a committee of three, consisting of John Weher, J. L. Lemberger, and G. W. Sloan.

The Secretary of the Council read the names of one hundred and seven druggists who had been reported to the Council as desirable members for the Association, and, on motion of Mr. Seabury, of New York, they were invited to become members.

Reports of committees being called for, the following reports were read by title and laid over:

Reporter on Progress of Pharmacy. Committee on National Formulary, and Committee on Incorporation of the Association. Mr. A. E. Ebert, of Chicago, reported from the Committee on Revision of the Pharmacopœia that they had had no meeting this year; the Committee would have to be reconstructed somewhat, and promised a report for the next yearly meeting. Prof. J. P. Remington, from the Committee on Management, reported that they had preferred to make no report this year, but would wait to see the effect of the working of the new system.

The roll of States was called, and, according to the new amendment of last year, each State appointed two men who were delegates, and the President appointed five men who were not delegates, to serve as Committee on Nomination for Officers of the Association for the ensuing year. They were as follows:

California—Emlen Painter. Connecticut—Frederick Wilcox. Dakota—H. M. Haussamer, J. M. Da Rold. Delaware—S. E. Stewart. Illinois—T. M. Jamieson, E. C. Day. Indiana—G. W. Sloan, Jacob Bauer. Iowa—Rosa Upson, C. Wangler. Kansas—R. G. Brown, L. E. Sayre. Kentucky—G. C. Pfingst, O. E. Mueller. Louisiana—W. Boyd, Mrs. E. Rudolph. Maine—Henry Cunning. A. R. Bayley. Michigan—Geo. Gundrum, D. O. Haynes. Minnesota—Carl Simmon, J. C. Henning. Missouri—H. M. Welpley, F. G. Uhlich. New Hampshire—C. B. Spofford. New Jersey—Charles Holzhauer. New York—G. J. Seabury, William P. De Forest. Ohio—J. Heckler, J. Weir. Pennsylvania—C. A. Heinitsh, J. F. Patton. Rhode Island—H. J. Aldridge, W. E. Cates. Tennessee—Al. A. Yeager, J. L. Thompson. Wisconsin—J. A. Dadd, A. H. Hollister. Province Quebec—S. Lachauer, E. Muir. Province Ontario—J. E. D'Avignon. At large—A. E. Ebert, Edmund Bocking, John Ingalls, J. Dupont, J. F. Judge.

The Committee was notified to meet at the Cadillac Hotel at 8 P.M.

The minutes of the Council were read for approval. The Council had been organized by the selection of W. H. Rodgers as chairman, Carl Simmon as vice-chairman, and G. W. Kennedy as secretary. The usual committees had been appointed. The title of the National Formulary had been discussed and fixed and the contract for its printing and binding awarded to the lowest bidder. The Committee on Membership had sent circulars to each member calling attention to the change in the manner of electing members. A rule had been added to the by-laws of the Council in regard to trust company's bond for treasurer. The American Pharmaceutical Association had been incorporated in the District of Columbia under Act of Congress which required that seventeen or eighteen members of the thirty-five necessary should reside in that District, and be the managers of the Association and of its finances during the first year; these provisions had required no changes in the by-laws of the Association. The certificate of incorporation, which was kept by the Council, was read. An appropriation of $200 had been made for the exhibition of the preparations of the National Formulary. A change had been made in the fees for life membership, and the Council had decided hereafter not to meet on Sundays. The work of the Council was on motion approved.

A. E. Ebert offered an amendment to the by-laws that the Secretary of the Council may or may not be a member of the Council.

S. A. D. Sheppard, of Boston, Mass., offered an amendment to Art. VIII., sec. VI.

E. Painter, of New York, moved that a committee of three be appointed to select the time and place of the next meeting, and also extended an invitation from the California State Association for the American Association to hold its next meeting in San Francisco. Referring to the many times this invitation had been extended, he thought we should accept it this year as a duty we owed to them and the good it would do the Association.

Mr. Sheppard said that too much time was taken up year after year by discussing time and place of meeting in the Association, and thought that a large committee consisting of fifteen members should be appointed to consider and have authority to act in this matter, twelve of the committee to be appointed by the Association and three by the President, the said committee to give two hearings to any persons who might suggest places to them.

Mr. Painter thought the scheme good in some respects and bad in others. The committee, by giving two hearings, might take up too much time and then be unable to come to a definite conclusion.

Prof. J. P. Remington, of Pennsylvania, said that, when the Committee on Management amended the by-laws arranging the business of the meeting last year, they had thought it judicious not to take away any of the business of the Association that would be of interest to the members, and they had kept that in their mind in all their work. Now this matter of selecting time and place of meeting he considered as a matter of interest to all the members, and as such should be settled in open meeting, and then none could feel aggrieved. It might save time to refer this to a committee of three or of fifteen, but he certainly would never consent to be one of such a committee, for they would never be able to please the majority of the Association. If it was to be settled by a committee, it had better go to the Nominating Committee, they were a representative body now, as they are appointed by each State.

Mr. Painter, of New York, thought there would be too much work for the Nominating Committee to select officers and to take charge of the consideration of this matter.

Mr. Hechler thought there should be a session of the Association set aside for the general consideration of this subject.

The motion that fifteen members constitute the committee and have authority to settle the time and place was lost, and the motion that a committee of three be appointed to report to the Association was carried. The President appointed Emlen Painter, New York, J. P. Remington, Pennsylvania, and P. W. Bedford, New York.

The meeting then adjourned until nine o'clock on Tuesday morning.

Tuesday, Sept. 4th, 1888.

Second Session, called to order at 10 A.M. by the first vice-president, Mr. M. W. Alexander.

Secretary J. M. Maisch read the minutes of the previous session, which were approved.

The minutes of the Council were read and approved, also forty-seven names of proposed new members who were invited to join. A change in the rule of finances was proposed by the treasurer, that dues should be paid by the 30th of June of each year, and if not within twenty days after, a sight draft should be drawn.

The Nominating Committe reported that they had met and selected the following officers for the Association:

President—M. W. Alexander, St. Louis; *1st Vice-President*, James Vernor, Detroit; *2d Vice-President*, Frederick Wilcox, Connecticut; *3d Vice-Pres.*, Alvin A. Yeager, Tennessee; *Treasurer*, S. A. D. Sheppard, Boston; *Secretary*, J. M. Maisch, Pennsylvania; *Reporter*, C. Lewis Diehl, Kentucky. *Three members of the Council*—Henry Canning, Boston; Emlen Painter, New York; C. L. Keppler, Louisiana.

On motion, the report was received, and one ballot was cast for the president, which being done, Mr. M. W. Alexander was declared elected.

On motion, one ballot was cast for 1st vice-president, and Mr. James Vernor was declared elected.

On motion, one ballot was cast for the rest of the names reported by the Committee, and they were declared elected.

A telegram was read from the British Pharmaceutical Conference at Bath, England, which was received, and on motion of Mr. DeForest, of Brooklyn, the secretary was directed to acknowledge the receipt of the telegram, and to return cordial greeting.

The reporter on Progress of Pharmacy, C. Lewis Diehl, then read the preliminary part of his report for the past year. Extracts taken are as follows:

"Since our meeting here twenty-two years ago," he said "our national pharmacopœia has been revised twice, and the time is near at hand for another revision of that standard, for which preparations are being made both by the societies concerned in the revision and by the permanent committee of revision created in 1880. The work is likely to be more arduous than ever, for the introduction of new remedial agents has so rapidly followed the one upon the other, that it has been difficult for pharmacists to keep up with them. The widening of the scope of the pharmacopœia is not confined to the United States, as is evidenced by the action of pharmaceutical bodies abroad. The formulas and definitions will not alone be thoroughly revised, but the remedial agents that have in recent years come to notice will be very completely represented in the work.

"Scientific pharmacists have invented better, or at least more convenient, preparations than those which are in the pharmacopœia. They have invented, too, pleasanter forms of administration. Since the production of their new compounds on a large scale is cheaper than on a small scale, there are good grounds for believing that the call on the part of the medical profession for these preparations and medicines is increasing and will increase and that this call will distinctly affect pharmacy. The new compounds are welcomed partly because of their convenience and partly because their uniformity of composition is, to a certain extent, guaranteed by the producer. At dispensaries, students, with few exceptions, learn little or nothing, and even the opportunities for acquiring a knowledge of compounding drugs under practitioners who dispense their own medicine have somewhat diminished; for ready-made medicines are usurping the place of the official preparations. It is not likely that a return will be made to the old system under which medical students acquired a knowledge of pharmacy. If, then, the sole office of the pharmacist were to compound drugs, the future of pharmacy could not be regarded as satisfactory. In that end, however, the very increase of the wholesale production of compounded medicines, as simple articles of commerce, will not take from, but add to, the work of the future pharmacist, if he fulfils all the duties which seem to belong to his occupation. If pharmacy is to hold its own, each pharmacist must be, in the future, guarantor of the purity of the medicines he dispenses, not the mere distributor. The rise of pharmacy to a higher state, or its fall to a lower, depends on whether its more scientific functions are accepted or declined.

"The pharmacist is held responsible for the medicines he dispenses, whether these are prepared in his own or some one else's laboratory. While in emergencies the pharmacist may be called upon to purchase fluid extracts from the wholesale manufacturers, it is plainly his duty to prepare them in his own laboratory whenever possible. The conscientious pharmacist cannot fail to make it remunerative to himself as well as doing justice to his assistants and the public.

"During the past year, a number of papers have appeared that are directed towards an adjustment of the grievances between physician and pharmacist. Some fifty papers on the subject were elicited by the *Pharmaceutical Era*, the one by Prof. F. H. Gerrish, of Bowdoin Medical College, securing the prize offered. He regards the unsatisfactory relations between the two professions to be due to very simple causes, for which both are responsible. On the part of the pharmacists the custom of prescribing, aggravated by a lack of proper qualification and education in medicine, the custom of renewing prescriptions without the sanction of the physician; the sale and its encouragement of so-called patent medicines. On the part of the physician, the custom of verbally directing the renewal of prescriptions; the demand on the spur of the moment of whimsical preparations or for different brands of the same standard medicine; the habit of some physicians in localities where pharmacists are accessible of furnishing their patients with medicines.

"It is clearly the duty of the pharmacist to attend to the preparation, dispensing, and sale of medicine, in which event he must, or should, conform to the code of ethics of the medical profession. The renewal of prescriptions is an evil for which the physician is equally responsible. The sale of patent medicines, while it cannot be avoided, need not be encouraged by the pharmacist. The physician, on the contrary, should not whimsically designate the products of special manufacturers in his prescription, and he certainly should not supply the medicines needed in his prescription if such can be filled in the locality in which he resides. The professions of medicine and pharmacy are so intimately related that they cannot afford to quarrel!"

The report was discussed by Prof. J. P. Remington, of Pennsylvania, Dr. James, of St. Louis, Dr. Stewart and Dr. R. G. Eccles, of Brooklyn. Dr. James, referring to the allusion of substitution by German druggists, said the cases cited were all of homœopathic druggists. The homœopathic physicians had found it almost impossible to obtain their medicines correctly prepared from the homœopathic stores, and had adopted the method of sending around to them prescriptions calling for the most absurd and unheard-of things, and, in a majority of cases, they were filled.

The speaker knew what he was talking about, as he was the first to translate these cases in this country, and he did not want the regular druggists blamed for it, as they have been.

Dr. Stewart thought the report dealt with an interesting subject, when speaking of the relations of the physician and druggist, and stated the American Medical Association was considering the idea of establishing a Section on Materia Medica and Pharmacy to which the American Pharmaceutical Association will probably be asked to send delegates.

He thought the American Pharmaceutical Association would do well to reciprocate by establishing a Section on Therapeutics in their Association.

Prof. Remington was glad the subject had been brought to the attention of the Association. There should be a systematic effort made to bring the two professions together, and anything that will break the policy of non-intercourse, and will promote harmony, is good and must meet with success. There is no doubt that delegates from the American Pharmaceutical Association coming with this in view would be received with open arms. One ground which they could regulate would be the prescribing of officinal preparations, instead of non-officinal ones, and thus give the druggist a chance of his life.

The speaker spoke of the success of the Committee from the Pennsylvania Pharmaceutical Association to the Pennsylvania Medical Association, and the action of the Medical Association in incorporating in their by-laws amendments to encourage such committees. He was in favor of the action of the American Medical Association establishing this Section in Pharmacy and Materia Medica in that body, but he would not recommend the American Pharmaceutical Association to take any action just yet, as the Medical Association must first invite us to meet with them, and then we can reciprocate the compliment.

Dr. R. G. Eccles, of Brooklyn, thinks the American Medical Association is making a right movement in taking this action, and thought we should at once show our appreciation of it by doing as much ourselves; for if we wait, it will look as though we were dragged into it; but if we now determine to establish a Section on Therapeutics, we would show we are as anxious as they. Only the progressive men of each society favor such a movement. There are plenty in each who are not progressive enough to see the benefit of such a movement, and they will do all they can to retard it. So the sooner we work for it the better.

Mr. Seabury, New York, said the acoustic properties of the hall in which the Association was meeting was so bad that those in the back could not hear, and moved that a Committee be appointed to interview the janitor to see if it were not possible to secure the room down-stairs. Carried, and Messrs. Merrill and Hechler were appointed such a Committee.

Mr. William P. De Forest, of Brooklyn, read the report of the Committee on National Formulary on Unofficinal Preparations, which announced the completion of the labors of the committee and submitted certain propositions as to the manner of revising the work in the future. These propositions were contained in the following two resolutions [which were acted upon at a subsequent session]:

1. *Resolved*, That a *Committee on National Formulary* be appointed at the meeting of the Association following the publication of the work. The said committee to hold office, unless otherwise directed by the Association, until their successors are appointed at the meeting of the Am. Ph. Assoc. succeeding the issue of a *revision* of the work, and shall report at each meeting of the Association.

2. *Resolved*, That the Council of the A. P. A. shall have authority, upon the recommendation of the Committee on National Formulary, to make all necessary arrangements for the publication of a revision, and to provide for its distribution.

The report was received, and Emlen Painter, of New York, moved a vote of thanks to those gentlemen, not members of the Committee, who had assisted the Committee in their work. This was amended by others, in-

cluding the Committee, in the resolution of thanks and of a special vote of thanks to Dr. Charles Rice, the Chairman of the Committee, for his indefatigable efforts in this work. These were carried unanimously. The resolutions proposed by the Committee were read and the whole subject of the National Formulary was referred to the Section on Scientific Papers.

Report of the Council showed that the Committee on Publication had awarded the contract for publishing the National Formulary to the lowest bidder. There had been printed and distributed a first and second edition of two thousand and three thousand copies, and a third edition of three thousand was in course of distribution.

J. M. Good, of St. Louis, spoke of the impossibility of printing the Formulary in the proceedings last year, as ordered by the Association, and thought it is not necessary to have it done now, as the book had been sent to each member.

Messrs. Emlen Painter, of New York, and Hallberg, of Chicago, disagreed with him, as they thought it was part of the record of the Association, and should be in the proceedings, and, on motion, it was ordered to be printed in the proceedings this year.

The Treasurer S. A. D. Sheppard, Boston, read his report. The receipts during the year were $7,937.05, and the balance from the year before was $4,719.44, making a total of $12,656.49. The disbursements during the year were $10,280.42, leaving a cash balance in the Treasurer's hands of $2,376.07.

In the items of disbursements was one of $4,000.00 which was invested in U. S. Bonds, thus making the actual expenses for the year $6,280.42. The Auditing Committee reported that the funds of the Association invested in U. S. Bonds amounted to $11,347.82.

The Committee on membership reported that a year ago the Association had 1,291 members. The new members during the last year swelled this to 1,395, but the loss due to death, resignation, and suspension was 138 members, leaving the membership at 1,257. The Committee gave a list of deceased members and a brief obituary of each.

A. E. Ebert, of Chicago, referring to the fact that a great many druggists had been invited last year to join the Association, and but a few had availed themselves of the invitation, thought the by-law should be changed and the Association go back to the old plan, for the present plan of begging men to connect themselves with the Association was lowering the dignity of such a body.

Mr. G. L. Kennedy, of Pennsylvania, said that members should be very careful as to what names they presented, for in several instances the invitation had been returned with the statement that they were already members, and had paid their dues and could not understand why they should be requested to send another five dollars or sign again the by-laws.

The Committee on Time and Place of Meeting for next year unanimously reported in favor of San Francisco, the time to be left with the council, with the understanding that it should be about August 1st.

Mr. Hallberg, of Chicago, wished to know about what the railroad fare would be, and the time necessary to be taken.

Mr. Painter said that the fare would be very much reduced if a company could be formed to go from the east, so that the expense would be but a little more than at any other place near by. That it was a duty we owed to the brethren on the Pacific coast to hold our meeting there, or else decide that we are not an Association for the whole country. We never have a very large representation from any one part of the country at any meeting, no matter where it is held, except those living in the locality the Association meets in. The regular attendants of the Association would, no doubt, attend no matter where it is held, and the effect on the druggists in California and the Pacific coast would be such as to bring them in the Association in large numbers, and thus do good to it as well as to themselves.

Mr. Seabury, of New York, thought we ought to think well before we did this, for he believed it would be an expensive trip. He put the figure at $500 as what it would cost, and that was too much for the average druggist to pay for his summer vacation.

Mr. L. E. Sayre, of Kansas, said that appealing to his pocket, it would be a question whether he could go or not, and so he might be deprived of the privilege of attending the Association for one year, but he believed in looking at it in a more unselfish way than that, and leaving himself out of the question, consider whether it was not due to the brethren on the Pacific coast for us to send the Association there. He had seen the same opposition when the question was raised in the Teachers' Convention, but when they decided to go, the matter was placed in the hands of men with great executive ability, who succeeded in getting up a grand excursion and the railroad fare there and back was only thirty-five dollars for each person. Five dollars of that went into the Treasury of the Association and they received so much that they have now a large surplus.

Mr. Ebert, of Chicago, said that a few years ago he was chairman of a committee to take a census of the members, as to how many would attend the meeting. A great many did not reply; 80 from the East said they would go, 50 would not, but from the Pacific slope they received responses from 400 who said they would attend and that there would be 21 papers furnished. He approved going there and would vote for it.

Mr. Brown, of Kansas City, said the only question to be considered was, not the selfish one of each individual, but whether it would be best for the Association.

Mr. Carl Simmon, of Minnesota, made an appeal for the Association to meet in St. Paul or Minneapolis, Minnesota.

Several other members spoke upon the question, when the report of the Committee was adopted by a large rising vote. A Special Committee of five was appointed by the president to make arrangements with the railroads and report to the Council at some future time.

Association then adjourned till afternoon.

Section on Commercial Interests.

Tuesday afternoon, 3.30.

This being the third session of the Association, according to the by-laws it was given up to the section on Commercial Interests.

The Chairman, A. H. Hollister, of Madison, Wis. occupied the chair and called the section to order. J. W. Colcord, of Boston, the secretary, made a short report.

The Chairman stated it was the duty of this section to appoint a Committee on Exhibits and asked how it was to be done. It was decided that he should appoint them.

He named F. Wilcox, of Connecticut; J. F. Patton, of Pennsylvania; and Alexander K. Fintay, of Louisiana.

W. H. Rogers, of Middletown, N. Y., offered a resolution that the secretary of this section correspond with manufacturers, requesting them to label their products in conformity with the officinal nomenclature, and to designate strengths by sp. gr. or per ct., and abolish arbitrary signs such as "ff" marks and Baumé, and that the co-operation of the National Wholesale Dealers' Association be solicited toward securing this result.

Carried.

Mr. Rogers, the only member of a committee appointed last year, being called upon for a report, said the committee was unable to do anything, as there was a question as to where their work begins or ends and as to how much it trenches on others.

Mr. Colcord, the secretary, also spoke in reference to the same.

A motion was made to appoint a committee to report nominations for officers of the section for the ensuing year. Messrs. Alexander, Ebert, and Ingalls were made such a committee, and very soon after reported the following: A. Hollister as chairman and J. W. Colcord as secretary. The Committee explained why they decided to report the re-election of the present officers. These gentlemen had not had much chance to understand what they were to do this last year, and that in another year they could make the section more interesting.

Chairman Hollister declined a re-election, for if there was any honor in such positions they should be passed around. He had had no misapprehension of his work, and had performed it to the best of his ability, though there had been great difficulties in the way. As to his not having made a report, he had conferred with several of the members of this Association, and with the President of the Michigan Association, and it was deemed advisable by all to defer it until the evening session, when the two Associations would meet together.

Mr. Alexander said that he had had no intention of reflecting on the chairman in his remarks, but had meant the section was hardly in good working order yet, and by continuing the present officers another year, much good might be done.

Mr. Hollister said all he wanted to do was to seek the good of the Association, and if he had failed it was an error of judgment, an error of head, not of heart.

The acting chairman, Mr. Rogers, was then directed to cast one ballot for the nominees of the committee.

Mr. Canning offered a resolution that the manufacturers in the rebate system be requested to furnish no rebate goods to any wholesale firm or party who retail such goods, no matter how much they may purchase, and that the National Wholesale Dealers' Association be requested to co-operate in carrying this out.

This was debated by Messrs. H. Canning, J. W. Colcord, C. S. Hallberg, R. G. Eccles, E. Painter, and others, who thought it was a desirable move, for it was impossible for retail druggists to compete in prices with those jobbers who bought in large quantities under the rebate plan, and then sold them at a very little advance. The same resolutions had been before the Massachusetts Pharmaceutical Association and by them brought to the attention of the wholesale association. It was brought here for us to act upon.

Some thought that the question of conspiracy might be raised by any firm of wholesalers who had regular retail stores, and the wholesalers would be only too glad to have a chance to laugh at us and pay no attention to our request.

Mr. Colcord spoke of a notion store in Boston putting up nineteen thousand prescriptions in a year and a half; he said if the wholesaler continues this practice of retail-

ing, there will be no business for the retailer, and he will soon be ground out. Anybody in Boston can go in the wholesale drug store there and buy as cheaply as the druggist can.

It was finally referred to a committee of three to report at the evening session. Committee: Messrs. Canning, Hallberg, and Eccles.

Mr. C. F. G. Meyer, of Cleveland, Ohio, was introduced as a delegate from the National Wholesale Druggists' Association, and made a speech in which he showed the wholesale dealers were in sympathy with the American Pharmaceutical Association in its scientific pursuits.

Mr. Seabury, of New York, started a discussion on the practice of wholesale dealers substituting a cheap drug for a higher priced one in filling retail orders. That firms took pains to introduce goods and to leave the orders received with wholesale dealers; and when later druggists were called upon to supply the articles, that other goods were being substituted for them, the excuse of the retailer being that he could not get them from his jobber. He believed in only one kind of substitution and that was when a physician orders an officinal article, though he designates any maker, the druggist can supply his own make, knowing it to be as good, if not better.

Dr. Eccles did not believe even in this kind of substitution, as it might be the entering wedge to vice, and, like all wedges, very thin, and makes but small opening at the first, but soon broadens into larger ones and then will admit greater things, and he reminded the Association of the story that Prof. Remington had once told of the fl. ext. cinchona which the druggist said he knew was good, because he had made it himself. It was very light-colored and proved to be only one-fifth the strength. So the mere fact of a druggist making his own preparations was not a proof they were the best, and if a druggist commences to substitute even in that small way, it will tend to make him do so when more important things come in his way. There is but one safe way: don't put up the prescription at all, or put it up as it is written. As to obtaining goods from jobbers, if the druggist insists upon getting the goods he wants, and will pay the price asked, he will always get them.

Mr. Brown, of Kansas City, doesn't believe there is as much substitution going on among druggists as there was fifteen or twenty years ago. The facility for getting goods is so great now that it is his own fault if he don't get them.

Mr. Eliel, of Indiana, coincided with Mr. Brown and thought this talk of substituting more of a bugbear than a fact.

Mr. Brown said that, if Mr. Seabury knew of any wholesaler in our Association who was guilty of substitution, he should bring charges against him and have him expelled.

Mr. Painter said he had no trouble to get the goods he wanted; the jobber, if he did not have it in stock, would make great efforts to get it for him, sending sometimes as far as Chicago for that purpose.

Mr. Ebert, of Chicago, said the charge of substitution could not be brought against the jobbers of the West, as he had never known of such a thing there for the last twenty-five years.

Mr. Colcord announced the arrangements for an excursion to Chicago and the lakes, to start Saturday night and return by Tuesday noon; cost, including state-room and meals, $16.

The meeting then adjourned until evening.

Tuesday Evening, 8:25.

The Chairman of the Section on Commercial Interests, Mr. A. H. Hollister, called the meeting to order at 8:22 P.M., and delivered an address filled with advice and encouragement to the patient druggists which pointed out the way to success and instilled ideas of duty and honesty. He said the interest connected with this section was the interest that gave them their bread and butter, which none but those fully equipped could hope to win. He advised preliminary education of apprentices as necessary, spoke of the relations of pharmacists and physicians. He believed we should form a mutual fire insurance company. The tariff, where it affects our interests, we should try to remedy, and especially have the twenty-five-dollar-tax on spirits wiped out. We should use our influence on the Government to have measures adopted looking toward the cultivation of medicinal plants, such as the poppy, the indigo plant, the plants of the citrus family, and the olive. He referred to the cutting craze as unbusinesslike and suicidal, and finished by saying the druggists of the country are looking to the A. P. A. to solve these questions and lead them to success.

A motion made by Mr. T. J. Macmahan, New York, that a committee take the report in charge and report upon the suggestions, did not meet with favor, and, on motion of Dr. Eccles, of Brooklyn, the section decided to discuss the report section by section, and if any gentlemen present had papers prepared on any subject embraced in the chairman's address, they could read them when that subject was under discussion.

Mr. Basset, president of the Michigan State Pharmaceutical Association, was introduced, and made an address.

Mr. F. D. Wells, of Lansing, Michigan, member of the Michigan State Association, read a paper on liquor legislation.

Dr. Eccles moved the Section take up the regular order of the chairman's address, commencing with the first proposition.

After some discussion, this motion was carried, and the chairman then read the first proposition, that no apprentices should be received except those having a good English education.

Mr. Whelpley, of St. Louis, moved that the proposition be referred to the Section on Pharmaceutical Education.

The second proposition, as to the relation between physician and pharmacist, led to a long discussion, which was participated in by Messrs. Painter, Remington, Hallberg, Eccles, Macmahan, Holzhauer, Hollister, Alexander, and Eberbach, the main point of which was the use of the phrase by the chairman, "that the druggist should seek to make some arrangement with the physician." It was feared this would be misunderstood by outsiders to mean a monetary arrangement. It was finally settled by putting the word "professional" before arrangement.

The third proposition, that of "Mutual Insurance," brought out the fact of a Druggists' Mutual Insurance being already established in St. Louis, which was indorsed by several members. The Section adopted the suggestion of the chairman.

The fourth proposition, "Tariff on Medicines and Liquor Legislation," was then discussed by Messrs. Leo Eliel, Eccles, S. A. D. Sheppard, Hallberg, Parkill, Painter, Diehl, Remington, Canning, and Whelpley.

Dr. Eccles said there would be no harm in taking the tax off whiskey, for there are only three classes in the community. One who does not drink at all, and he would not drink any more if liquor was free. Second, the moderate drinker who has enough when he has drank his one or two glasses, and cheapness would have no effect on him; and third, the drunkard who rolls in the gutter, who has filled himself to his utmost capacity, therefore, no matter how cheap the liquor might become, he could put no more in himself. In fact, the latter would be benefited, for now when it costs him ten dollars to get drunk, with untaxed whiskey then he could do it for five dollars and have the other five dollars for his suffering family. The cheaper alcohol would benefit druggists, as it is used in the preparation of fluid extracts, alkaloids, ether, and many other necessary things. He thought the U. S. Government in taxing liquor was robbing the sick and suffering.

Mr. Sheppard indorsed the suggestion of the chairman, for the twenty-five-dollar tax brought us into the class of liquor sellers, and that he wanted stopped.

Mr. Hallberg thought this matter should not be touched by the Association, but left to be acted upon at the polls this fall, but if anything was done, the Lawlor Bill now pending in Congress, which was simply to remove all special taxes, should be indorsed. This was opposed by several as verging too near to politics. After a very long discussion, the section passed a resolution asking Congress to repeal all special taxes.

The fifth proposition on cultivation of plants was indorsed.

Prof. J. P. Remington said, in reference to the poppy plant, that there was no doubt it could be successfully cultivated, as it has been in several parts of this country; but as to the yield of opium, it was questionable whether that could ever be made a paying project on account of the price of labor. We cannot hire help to sweep off the juice and get it in sufficient quantity cheaply enough.

The discussion on the sixth proposition, relating to the cutting craze and the retailing by wholesalers, took up a large amount of time and was participated in by many of the members.

Mr. Canning's resolution, which had been offered in the afternoon session and sent to a committee, was reported with an amendment that nothing in the resolution shall interfere with those firms who carry on a retail department in a separate and distinct pharmacy buiding.

Mr. Sheppard thought it a waste of breath to try to pass such resolutions. The best way was for the druggist to form a co-operative partnership for the purpose of buying goods in large quantities and thus get the benefit of the rebate. If some such plan was adopted generally, it would be successful. He was not prepared to say just now how it was to be done. They had tried it in Boston and it worked very well until the jobbers refused to supply them with goods. But though it had not succeeded just then for that reason, he believed that if it were made general all over the United States, they, the jobbers, would be forced to supply the goods.

Mr. Basset, President of the Michigan State Association, thought nothing could be done about the cutting craze; that men, when they buy goods, could do as they pleased with them. It was an underlying principle in business, and we had better leave the subject alone; any movement that attempts to regulate another man's business must and will fail.

Mr. C. S. Hallberg said, the reason we were losing the trade in proprietary medicines was because we would not assume any responsibility for them.

Dr. Eccles thought we should pass the resolutions so as to establish a moral sentiment, though he didn't believe it would have any effect. One bad feature, if we did pass

them and they were regarded by the wholesalers, would be, that no retailer would be able to become a wholesaler. It may stop cutters, but it would also retard the growth of the retailer, for he could never then get goods in sufficient quantity to do any little jobbing trade that comes to his hand.

Mr. Eliel spoke against the resolution. The resolution was carried by a vote of 25 to 22, but very shortly afterward, on motion of Mr. Henry Canning, its author, the vote was reconsidered.

Mr. Sheppard moved that it was the sense of this Association that some arrangement should be made by the Association that retailers should be able to buy goods under the rebate plan. Discussed by Messrs. Seabury, Basset, Remington, Painter, Dadd, Sheppard, Eccles, Hallberg, and De Forest, of Brooklyn.

Mr. Seabury said it was because the druggists of New York and Brooklyn did not stand by their unions that the trouble had become so bad, and he made a long speech complaining of their action.

Mr. Painter replied that it was the unions that had advertised the cutters, and put them on their feet and it was altogether their fault the cutters had grown so strong.

Mr. Hallberg said that, if pharmacy laws were better enforced there would be no cutters. In Chicago they had had three cutters, but that one had been shut up by the sheriff, the second had been forced to take out a five hundred dollar license fee for violation of law, and would soon go under, and the third had died.

Mr. De Forest said that as to enforcing the law and so forcing the cutter out business, that did not apply of Brooklyn. The cutters of Brooklyn were more particular than any in obeying the law. For no matter how many times they changed their clerks, whether it was once a week or once a year, they would immediately send them down to be registered or examined. The pharmacy law had been enforced as well, if not better, in that city than in any place in the country. He knew what he was talking about, for he had had the administration of the law in that place for the last five years.

The following gentlemen were named constituting the Committee to Assist the Officers in their Work: Messrs. Leo Eliel, Chas. Holzhauer, and William Searby.

The Committee on Exhibits wanted information as to the desire of the Association of how to grant the prizes: whether grandeur or size of exhibit; and whether all exhibits no matter how slightly connected with the business, should be considered to be entitled to be in competition for the prize. After some discussion, Mr. Painter moved that the Committee take in consideration everything that was admissible and then use their own judgment.

The Section then adjourned at 11 P.M.

FIFTH SESSION.

Wednesday Morning.

At 9:55 the Association was called to order, and listened to the reading of the minutes of the last meeting, and acted upon the initiation to eighteen new members. It then gave way to the

SECTION ON SCIENTIFIC PAPERS.

The Chairman and Secretary of the Section being both absent, the third member of the Committee, Prof. J. M. Good, of St. Louis, called the Section to order and asked that officers of the Section be elected. It was decided that Prof. Good should act as Chairman during this meeting, and Prof. H. M. Welpley as Secretary. Nominations for officers for the ensuing year resulted in Messrs. Emlen Painter, of New York, and H. M. Whelpley, of St. Louis, being elected as Chairman and Secretary, and the Chairman elect appointed Dr. R. G. Eccles, of Brooklyn, as the third member, they to be installed at the close of the business of the Section.

Prof. Prescott, of Ann Arbor, Mich., read a paper on Artificial Salicylic Acid, prepared by Erwin E. Ewell and A. B. Prescott.

Dr. R. G. Eccles read a paper on Calycanthus Seeds and the Alkaloids found therein.

E. Painter wanted to know if the toxic effect upon animals was due to the alkaloid. Dr. Eccles questioned if the alkaloid had much if any effect, as he had eaten many of the seeds without any bad effect.

W. P. De Forest read a paper prepared by L. F. Stevens, Brooklyn, entitled "Condensed Notes upon Trials for a Quinine Mask."

Prof. Remington was sorry it was not possible to get some simple elixir that would cover quinine, as in the formula adopted there was a mixture of yerba santa with the compound elixir taraxacum, which elixir was a mixture of ten or twelve different ingredients. If the yerba santa alone could be used as a cover, it would be better.

Mr. De Forest said that had been tried, but had failed to hide the unpleasant taste.

Prof. Remington said that yerba santa had an unpleasant taste itself, and that, while that had covered the taste of the quinine, evidently the taraxacum was needed to cover the taste of the yerba santa. Now something should be found to cover the taste of the taraxacum, and then we would have a perfect formula.

Mr. Hallberg wished to know whether this was not the formula in the National Formulary; and when assured it was, said that it had been used very often in his vicinity and found to be very good indeed.

A. B. Stevens, of Detroit, read a paper on Peppermint Oil.

The Chairman announced there were about fifteen more papers to be read, besides the discussion of the National Formulary.

Prof. Henry Trimble read a paper in answer to Query No. 27: "The U. S. P. denotes as Catechu the Extract of Acacia Catechu; the Br. P. uses the Extract of Uncaria Gambier. Which of these two is to be preferred?"

The author stated that his results were a surprise to him, as he did not expect, at the beginning, to come to the conclusion he did.

C. S. Hallberg, of Chicago, read a paper on the Nomenclature of Pharmaceutical Reparations.

Mr. Painter thought this should be referred to the Committee on the Revision of the United States Pharmacopœia, so that it shall be kept before the Association. This was carried.

Dr. F. E. Stewart referred to new preparations mentioned in the London *Lancet* and other English medical journals, called Valoids. They are liquid preparations in which 1 lb. represents 1 lb. of the drug, and are really fluid extracts under another name. When these preparations are put on the market, they will mix up our nomenclature.

Prof. Remington suggested that there might be a chance in these new preparations for the retailer. For if the manufacturers are going to make trouble by urging the physicians to use their different makes, these valoids, not being so well known, can be made by the pharmacist himself; but, on general principles, it is demoralizing to nomenclature to call the same articles by different names.

Prof. Oldberg said there was a slight difference between the fluid extracts and valoids, as in the latter 1 lb. of finished product represents 1 lb. of the drug, while in the former 100 C.c. represents 100 Gm. of the drug.

Mr. L. E. Sayre, of Kansas, read a paper on Loco Weed, and remarked afterward that this weed had created great excitement in the West, for one State had paid out $63,000 and another State $200,000 for its collection and extermination. Of course, there had been fraud and imposition practised by the gatherers, for, in many instances, they had not only mixed other plants resembling the loco with the loads brought to the inspector, but some had also sown the regular weed, and then gathered it, thus making a nice little income for themselves.

Prof. Remington asked if these plants were found in the mountains or the lower region.

Mr. Sayre answered they were not found in the upper regions.

Dr. Eccles said he would throw out the thought that the pods of the plants contain leguminose, an albuminous body subject to decomposition. This is closely related to casein. We know casein will change to a toxic principle tyrotoxicon which has been developed in milk used in making ice cream. Why may not the leguminose in its decomposition produce a ptomaine which would have the toxic effect upon the animal? The plant is closely related to the physostigma and this production of a poisonous principle in this way might be possible.

Mr. Sayre said the toxic effect of this weed could not be referred to the pods, for the animals are poisoned before the plant is in flower. When the plant first begins to shoot above the ground the cattle eat it very greedily, and then again in fall, after the pod has shed its seeds. He had endeavored to secure a ptomaine in the decomposition products, but had not succeeded as yet. He would still continue his trials.

Prof. Oldberg said it was doubtful if the real loco weed which produces these effects was known or whether there was any plant which did produce them.

Mr. Sayre said that ranchmen agreed upon three varieties of Astragalus as being the loco weed. And as they were pretty generally observing men, they had no doubt they were correct. He would not say the loco weed was a myth, or that these symptoms were not produced by the plant, but he had his own ideas about it. There were any number of theories, all of which he would not stop to enumerate, but would mention two or three. One was, that it was caused by malnutrition.

Some thought that, as a large percentage of the plant was a fine fibre, like very light cotton stock, this being very indigestible, set up an inflammation in the alimentary tract.

Others claimed there was a little worm enveloped in the leaf which caused the trouble. He had collected all he could find upon the weed, and sent them to an entomologist for examination.

Others said it was a root that gets into the stomach. But it is well known that roots are digested and go off with the fæces.

He was inclined to the opinion that the effect supposed to be due to this plant was in reality mal-assimilation. Either the animal was overfed or ate something it could not digest.

Prof. Remington wanted to know if any experiment had been made in feeding these plants to a certain number of animals and watching the physiological effects.

Mr. Sayre said this had been done only with two animals, and a post-mortem examination held on them, but he had had no faith in the man who made the post-mortem. Nothing was found out. But such an experiment would be of no account. For only about five per cent of those animals who eat this plant become attacked with locoism, or die, and if the experiment failed, it would at once be said you had not got hold of the right animal.

Prof. Maisch said the only way was to go to the bottom and try all experiments, and called attention to the fact that all or almost all of Mr. Sayre's experiments had been made with carnivorous animals, and not herbivorous, and perhaps that was why they had failed. Even man is both carnivorous and herbivorous, and the poison may not have as much effect on man as it would on animals which only eat plants.

Mr. Brown, of Kansas City, and others took part in the discussion, after which the session adjourned until afternoon.

Wednesday Afternoon.

Meeting called to order at 3:40 by Chairman Good; W. P. De Forest, of Brooklyn, acting as secretary.

Mr. J. L. Thompson, of Tennessee, presented the following resolution:

Whereas, The able and interesting paper presented to this Association by Prof. L. E. Sayre shows that he has made extensive investigations of the properties of the loco weed, and that still further investigations and experiments will prove of great value to the State of Kansas, and the other States in which the weed grows; Therefore, be it

Resolved, That the American Pharmaceutical Association earnestly recommend to the Legislature of the aforesaid State that they give to Prof. L. E. Sayre their hearty indorsement and support for further investigation of the loco poison.

Remarks, all in favor of the resolution, were made by G. L. Kennedy, E. Painter, J. L. Thompson, M. W. Alexander, and J. M. Good, and it was passed without a dissentient voice.

The subject of the National Formulary, referred to this section by the main association, was then taken up and discussed. The point of interest was how often should the work be revised.

Mr. De Forest thought it was a work of importance, and as such should not be subject to too much change or changed too often. He personally favored a change not more than once every three years, but, conversing with some gentlemen of the Association, he found they thought it should be revised oftener. In order to test the question, he moved that the National Formulary be revised once in two years.

Prof. Remington thought Mr. De Forest had the right idea. It is a work of great importance, and if changed every year, the druggists would soon lose faith in it. They don't want to change the color or taste of a preparation too often, and it would be better to put up with something slightly wrong even for three years, rather than to have an uncertainty as to how often it would be changed.

Prof. Maisch said it would be impossible at the present time to say how soon it ought to be revised. We should wait and see; it should not be revised until after the next revision of the U. S. Pharmacopœia, and then there will be some material to work upon. Maybe some of the formulæ in the present work will be taken into the Pharmacopœia, and we may want to put those that are left out of the next Pharmacopœia in this book. At any rate, it wasn't practical to say how soon the revision will come.

W. H. Rogers thought the committee had had great labor and gone to a great expense to bring the book to its present perfectness, and it would be great folly to think of making any great change too soon. It should have a chance to be in the hands of physicians, and they should have a chance to try it before any change was made. Besides, there was a business side to the question. The expense of each revision should be met by the sales. Wholesalers would discredit our work if it they knew we would have to revise it too often.

Mr. Carl Simmon thought the work should be revised at least once in two years.

Prof. C. L. Diehl favored the revision once in five years, in the mean time giving the committee a chance to send out corrections if necessary.

Mr. Hallberg said that from the beginning it had been promised that this was to be a National Formulary, and in order to do this, it was necessary to have it revised very often. New York and Brooklyn had found it was impossible to give all the necessary formulæ called for through the country, and so they had called upon the country at large to help them. Now they have done their part of the work and it should go to other parts of the country and let them have a trial at it. Some of these things that are prescribed are short-lived, and if we are going to wait for three or five years to have a formula for them, we won't get them in at all. We should not wait until their life of usefulness has passed.

Mr. Day, of Illinois, looked upon the National Formulary as an appendix to the Pharmacopœia, and thought that, as such, it should be revised much oftener.

Prof. Remington said it is a sort of supplement to the Pharmacopœia, and the proper time to revise it is after the revision of the Pharmacopœia in 1890. Better not tie the committee down to any time, but wait until we see what we shall have by the way of a revision.

Mr. De Forest then withdrew his motion and in its place moved the adoption of the first resolution of the committee (see above), amended by adding the words "and report at each meeting of this Association." Carried.

Mr. De Forest then moved the adoption of the second resolution. Carried.

Mr. De Forest, reading the latter part of the report of the committee in reference to there being but one standard or authority, moved that the suggestion of the committee be adopted, to make a distinct announcement and place the same on record, that the U. S. Pharmacopœia be the *only* standard of authority for all *officinal* preparations, and that when any preparation in the National Formulary should be taken into the U. S. Pharmacopœia, the authority of the National Formulary over that article ceases and is thereby abolished. Carried.

Prof. Oldberg hoped the time would come when the U. S. Pharmacopœia should not contain any compounds, but be merely a collection of titles and tests and working formulæ for simples. No ointments or pills, or any such compounds, should be contained in it, and then the National Formulary could contain all these things.

Messrs. Remington and Painter agreed with Prof. Oldberg, and thought that in time this may come. But as this was not the Pharmacopœia Convention, nothing could be done about that now.

Mr. Hallberg coincided with Mr. Oldberg's idea and thought it might be done at the next revision.

Prof. Remington moved that this Section ask the President of the Association to appoint five members from the central portion of the United States and one member from each State Association to act as Committee on National Formulary.

After discussion, and several amendments being offered designating certain cities, which were lost, it was carried as originally offered.

Mr. Carl Simmon offered the following resolutions, which, after a little discussion, were carried:

Resolved, That the President of the American Pharmaceutical Association appoint a committee of five to visit the American Medical Association, to submit to their consideration the National Formulary, and to use their best endeavors to get the American Medical Association to adopt this work as an authority for all unofficinal formulæ contained therein.

Resolved, That the Secretary of the American Pharmaceutical Association be requested to send notice to the different State Pharmaceutical Associations requesting them to appoint a committee from their association to visit their State Medical Associations, at their next annual meeting, for the purpose of submitting to their consideration and adoption the National Formulary as an authority for all preparations contained therein.

The Section then listened to a paper by Mr. Enno Sander, of St. Louis, on Natural and Artificial Salts.

A discussion followed, principally devoted to the formula for Carlsbad Salt in the National Formulary, and the statement made that the Association would protect any of the members, if necessary, in the use of any of the formulas.

H. W. Snow read a paper on Phosphomolybdic Acid for the Quantitative Estimation of Alkaloids.

In reply to a question, Mr. Snow said three washings was all he had to use.

Dr. Eccles said the titration should depend upon the alkaloid. In some cases, phosphomolybdic would be the best, in others, Mayer's reagent.

Prof. Remington wished to know if the reagent would keep, or if it had to be made frequently.

Mr. Snow said it was apt to change and should be made frequently.

Prof. Henry Trimble, of Pennsylvania, read a paper in answer to Query 7: "Is the Precipitated Sulphate of Iron of Constant Composition? Does it Contain the Same Proportion of Water of Crystallization as the large Crystals?"

The Chairman announced there were five papers in his hands, presented through Prof. Prescott, of Ann Arbor, from gentlemen who were not members, and he wished the sense of the Section as to the disposition of them.

Prof. Bedford, of New York, moved they be received as volunteer papers and be read. Carried.

Prof. Painter thought preference should be given to the papers of members, and then, if there was time, to have them read.

The Chairman stated there were only nine more papers to be read, five of which were the volunteer papers, and four by members.

Mr. F. A. Thompson, of Detroit, read a paper on Pepsin Testing.

Prof. Sayre said he had over twenty men at work, this last winter, on pepsin, just to see how much acid was necessary to work pepsin. It had varied, but generally required a 0.2 strength. They went over the whole ground with

different pepsins, and found that one may require more acid than another.

Dr. Eccles said that he had tried a number of experiments a couple of years ago, and had found a 0.2 strength just right. The temperature was an important thing. At a high temperature, you produce a parapeptone; and at a very high temperature, there is almost nothing produced but parapeptone.

Prof. Sayre said that test-tube manipulation was not the same as Nature, and we are apt to get on the wrong track very often in our work.

Mr. Seabury, of New York, wanted to know whether the antiseptics that pepsin-makers used did not have some effect upon their product, and so cause the difference in their albumen-dissolving properties. All pepsin-makers must use some antiseptics, such as boracic acid, benzoic acid, or salicylic acid, and some traces of this must be left in the pepsin.

Mr. Thompson said he must take exception to this statement, for there was no antiseptic used in the preparation of pepsin.

Mr. Hallberg did not see the necessity of the use of any antiseptic. Nearly all these scale pepsins are made by macerating the stomach with acid, expressing the liquid, filtering rapidly, evaporating at a temperature of 140° F. or 150° F. to a fair consistence, then neutralizing by use of soda, ammonia, or some such alkali, bringing it to a syrupy consistence, spreading upon plates of glass, and drying in a closet.

Mr. Sayre said he had manufactured pepsin for many years and had not used antiseptics. He had tried to use them, but could not, as all of them were objectional. He had made odorless pepsin without any of these chemicals which had kept well for a very long time.

Prof. Remington thought it would be unwise, on the part of any manufacturer, to send out any pepsin with an antiseptic in, for they would certainly stop the action of the pepsin. Alcohol does not destroy the action, but only retards it, and the pepsin can be preserved by alcohol. Prof. Scheffer had started us on the track that alcohol and pepsin should not be given together, but he thinks he then made a mistake which we are gradually coming back from now.

The subject was discussed at great length, when it was moved to adjourn until next morning.

Thursday Morning.

Meeting called to order at 9:45. Minutes of the Association read and several members invited to join the Association.

The section on Scientific Papers held its last session.

Mr. Joseph F. Geissler, of New York, read a paper entitled, "Notes on the Morphiometric Assay of Opium."

Prof. Maisch asked if there was any objection to using hot water.

Mr. Geissler said the use of hot water caused the precipitation of many impurities which are not removed subsequently. Even spirit will not remove them.

Prof. Maisch said that was the trouble with the old method and agreed with his own experience.

Mr. Geissler said that when using an opium of over 15 per cent, the ammonium chloride and lime should be increased.

The loss of morphine in the mother liquor is 1 per cent.

Prof. Painter moved that all members of the Michigan Association and all those interested in pharmacy, present at the meeting, be invited to participate in debate. Carried.

Dr. Rosa Upsom read a paper on "Sponges."

Mr. A. M. Todd, of Nottawa, gave a description of a new still for the distillation of peppermint oil, showing a model of the same.

Prof. Prescott thought a great deal might be gained by a small stream of water running over the condensing pipes and thus the absorption of latent heat could be used.

Prof. Painter said that to have a stream of water running on a pipe would make it necessary to use a greater length of pipe, more so than to have the pipe surrounded with water.

Mr. Todd said he had attached the Remington condenser, laboratory size, once when his regular condenser was being repaired, and he found the condensation very rapid.

On a large manufacturing scale it was found cheaper to use long pipes and apply water. His condenser was thirty feet long, seven in diameter, and took one thousand barrels of water a day. One-third that size would take two thousand barrels.

Prof. Remington said it is a well-known fact that for manufacturing on the large scale the apparatus must be specially constructed. Appliances that can be used on a small scale cannot be enlarged, and one kind of still will not do for all things.

Mr. A. E. Ebert said an important thing often overlooked is the temperature of the steam for distillation, and the temperature of the water should be calculated. It is different at different times of the year. Most distillers use water from wells of a depth of 20, 30 and 40 feet, and the usual temperature is 50 to 60° F.

If you take into consideration the temperature of your steam in distilling, and the temperature of your water in condensing, you can figure out the size and length of your condenser.

Mr. Todd said the temperature of the escaping steam is always identical, no matter if you have 4 oz. pressure or 400 lb. pressure.

Mr. Hallberg said there were over 300 or 400 charcoal furnaces in the State of Michigan, and he had heard they burned the coal in the old way, that all the vapor was allowed to escape, and nothing but charcoal was saved. He wanted to know if any method had been utilized to save the other products. This distilling apparatus had suggested the inquiry to find out whether there could not be some cheap apparatus for this purpose.

Prof. Prescott said there may be some furnaces worked in the old way, where all the products are wasted. But in the most of them the vapors are drawn by fans and the products condensed.

Prof. Prescott read a paper, by John E. Pennington, on "Assay of Powdered Ipecac."

Mr. Thompson expressed surprise at the small percentage of emetine obtained; he had obtained double the amount in his work.

Prof. Oldberg wanted to know if Mr. Thompson in his experiments had used the bark and the ligneous cork or only the bark alone.

Mr. Thompson said he had used both.

A. B. Stevens read a paper, by E. Soebtje, on Query No. 20: "A Practical Formula is wanted for the Economical Preparations of Pure Commercial Mercurous Iodide (Yellow)."

Prof. Prescott said the success is due to the precision in making the mercurous nitrate.

Prof. Remington said there had been some controversy as to the proper color of the mercurous iodide. The British Pharmacopœia concluded to drop the green iodide, and the United States Pharmacopœia had changed its title. Some say the yellow is the proper color and the green color is due to decomposition.

A. B. Stevens said that if this formula was followed it would always be one color, and if kept from the light it will always keep yellow.

Prof. Good thought, if the bottle were kept in a drawer, that would be sufficient protection for it.

Dr. Eccles said that heat would change the color. The same is the case in the red iodide of mercury. By heating you make it quite yellow, then by rubbing it in a mortar you make it red again.

Prof. Prescott read a paper on Arsenic in Medicinal Bismuth Salts.

Dr. Eccles said his neighbor had asked him whether, if there were any medicinal doses of arsenic in bismuth salts, the medicinal effect of the drug was due to the arsenic or the bismuth.

Chairman Good.—I suppose the chairman is not obliged to answer that question (laughter).

Prof. Remington believes the effect of bismuth in bowel troubles and irritation of mucous membranes is largely due to its mechanical effects, by coating the membrane, and these solutions of bismuth salts, from which great good was hoped, had proved to be of no value in such cases.

An analogous case is that of prepared chalk and precipitated chalk; the former makes the best chalk mixture. Its molecular structure is such that it adheres to the membrane and so soothes it. He didn't believe the medicinal effect of bismuth was due to the arsenic it contained, but to its mechanical action.

A paper by Charles V. Boetcher on "Limit Tests for Calcium Tartrate in Cream of Tartar" was then read.

It was stated that many tests had been made with cream of tartar, purchased of grocers and of druggists. In almost every case the grocer's cream of tartar was very bad, containing a large quantity of terra alba, while the druggists' samples were good.

The paper was discussed by Messrs. H. M. Whelpley, G. W. Sloan, and C. S. Hallberg.

Prof. Remington then introduced Dr. S. S. Garrigues, one of the oldest members of the Association, a life member, who is a manufacturer of salt, who spoke for fifteen or twenty minutes on the way salt was manufactured in Michigan.

The Committee on Prize Essay was ordered to report to the Council.

The Section then adjourned.

Thursday Afternoon, 3:15.

This session, according to the by-laws, was devoted to the Sections on Pharmaceutical Legislation and Pharmaceutical Education, which were to be held simultaneously, or one after the other. The Section on Pharmaceutical Education not being ready for work, the Section on Pharmaceutical Legislation commenced its session in an adjoining room.

W. P. De Forest, of Brooklyn, the Secretary, in the absence of the Chairman, called the Section to order, and asked for nominations for temporary Chairman.

Mr. Alexander, the President of the Association, was by vote asked to take the Chair.

The Secretary then stated there was no report of officers, owing to the absence of the Chairman, but suggested that Mr. C. E. Day, of Illinois, who had been appointed chair-

man of a committee to prepare a plan whereby there could be an interchange of certificates between the different boards of pharmacy might have a report for the Section.

Mr. Day said he had sent letters to many and asked for suggestions, but received but little encouragement. He had no report to make.

The subject of interchange of certificates was discussed by Messrs. Keppler, of Louisiana; Butler, of Massachusetts; Alexander, of Missouri; Simmon, of Minnesota; Hollister, of Wisconsin; and De Forest, of Brooklyn. Mr. Simmon stated the Conference of State Secretaries had passed a resolution desiring the American Pharmaceutical Association to prepare a uniform law, so that all boards of pharmacy could recognize each other.

A telegram was read from the Chairman, R. F. Bryant, Kansas, announcing his inability to be present, and wishing a successful and interesting meeting.

It was moved that the Chairman appoint a committee of five to take in consideration the interchange of certificates by boards of pharmacy, and to draw up a plan whereby a uniform pharmacy law can be adopted. Carried.

Dr. Jamieson thought we should have a sample of the questions of each board, and the answers to them, to establish such a standard.

Mr. Day said this motion was almost precisely similar to the one of last year, and he did not think it would place us in any better position than that did.

Dr. Jamieson moved to elect officers for the ensuing year.

Mr. Day thought there was not any inducement to spend much labor on this Section, as so few members attended; the Section in the other room seemed to be drawing off our members; besides, he did not like to see this Section put at the tail end of the Association. It was as important as any of the others.

Mr. Hollister thought the two Sections of Legislation and Education should meet together, as their work was so similar.

Mr. Painter said this Section did not seem to understand what was expected of it and moved to take a recess until after the other Section had adjourned.

Mr. Hallberg gave notice that he would move to amend the by-laws, so that the two Sections should meet together.

The Section then took a recess.

At 5 o'clock it was again called to order by the Secretary, who asked the Section to again appoint a temporary Chairman.

On motion, Mr. A. E. Ebert, of Chicago, was asked to take the chair.

Nominations for officers for the ensuing year were called for and resulted in the election of C. A. Day, of Illinois, as Chairmain; J. U. Hurty, of Indiana, as Secretary; P. S. Brown, of Mississippi, as third member; Mr. Ebert and Mr. De Forest both declining positions as Chairman and Secretary.

A resolution was offered by Mr. Brown, of Kansas City, that State Associations should require members of the Board of Pharmacy to pass examination before taking position.

This was discussed and the question asked who would examine the men who are to examine the members of the Board of Pharmacy.

It was finally withdrawn and the following resolution offered in its stead.

Resolved, That State Pharmaceutical Associations exercise great care in selecting competent and educated pharmacists for the State Board of Pharmacy.

A resolution was passed asking the Association to so arrange the business that the Legislative Section does not meet simultaneously with any other section.

Mr. Hallberg consented to withdraw his amendment merging the two sections in one.

The officers were installed and the section adjourned.

Very shortly after the Legislative Section commenced their business, the Educational Section was called to order by J. F. Judge, the Chairman, H. M. Whelpley acting as Secretary.

On motion, a Committee was appointed to present nominations for officers. They reported: P. W. Bedford, as Chairman; L. E. Sayre, Secretary; Prof. Patch, as the third member.

The Secretary made his report.

A paper was read by R. G. Eccles on Pharmaceutical Education.

L. E. Sayre read a paper on The Importance of a good English Training, as a part of Parmaceutical Education.

This paper was discussed by A. B. Prescott, E. Painter, J. F. Judge, R. G. Eccles, H. M. Whelpley, J. P. Remington, and C. S. Hallberg. Prof. Prescott thought that a knowledge of English grammar was a necessary part of an appentice's training. Prof. Painter thought a knowledge of mathematics was just as necessary as grammar. J. P. Remington thought that memorizing was the bane of all our educational systems.

The thing that confronts all our teachers is what shall be done with men of brains and no education. A preliminary educational requirement will often reject men who are the best fitted for our business and accept many others who are not. Many young men come from college perfectly familiar with certain ways of stating and answering propositions, but just change the problem a little, and they are unable to think it out.

He did not think we could establish a professorship of English in our pharmaceutical colleges.

Mr. C. S. Hallberg offered a resolution that we recommend all our colleges of pharmacy to require a preliminary education at the earliest practical time.

Mr. Sayre said he was in hearty sympathy with the motion, but he was afraid it would be laughed at, for each college had its own ideas.

Mr. Fennel, of Cincinnati, thought this looked as though the Association was trying to dictate to the colleges.

Mr. Ebert said, Colleges of Pharmacy are like all other private business enterprises. They make great promises, but after all, they are dependent upon the money they can make. The best preliminary examination was to require the students to have two years' practical experience in a prescription pharmacy, before they can pass their junior course.

Mr. Day moved an amendment that a committee of three be appointed by the Chairman to determine a standard to be recommended to the colleges.

Letters were read from E. Goodman and E. Bastin, of Cincinnati, giving their view on a pharmaceutical education. On suggestion of Mr. Bedford, these letters were to be handed to the Chairman of the Section, to be considered at the next meeting.

The Local Secretary, Mr. James Vernor, of Detroit, gave notice of the time of departure and arrival of the excursion boat to Star Island on the following morning.

A discussion took place as to the legality of holding a meeting on board the boat, and it was decided not proper.

The Section then adjourned.

Friday Morning.

The Association was called to order at 9:20. The officers of the Association were installed in their positions.

Mr. Finlay, of New Orleans, made a motion to reconsider the action of the Association as to the place of meeting, San Francisco. This was discussed and by a standing vote lost: 30 in favor of reconsideration, 34 against.

Mr. James Vernor was made a member of the Committee on Arrangements for the next meeting.

The Committee on Exhibits reported awarding prizes as follows: To Messrs. Hance Brothers & White, of Philadelphia, a gold medal for the best general exhibit, and to Feldcamp, Hallberg & Co. for the best exhibit of pharmaceutical goods prepared by retail pharmacists.

Votes and thanks were passed to the druggists and press of Detroit and to the local committee. The minutes were read and approved, and the Association adjourned to meet next year in San Francisco.

PAPERS.

Artificial Salicylic Acid.*

Notes upon methods for estimating the quantities of homologous acids present.

BY ERWIN E. EWELL AND ALBERT B. PRESCOTT, ANN ARBOR, MICHIGAN.

Of the homologous phenols associated together in the distillates of coal-tar, the first member is the chief constituent of ordinary carbolic acid, but, it is well known, the higher members are not altogether absent. Considerable percentages of higher phenols are common in carbolic acid. Since salicylic acid is in greater part manufactured from carbolic acid by Kolbe's process,† inquiry naturally arises as to what becomes of the higher phenols of carbolic acid used in this manufacture. It had been found some time ago‡ that when the higher phenols of carbolic acid are treated as they are in Kolbe's method, they are changed into homologues of salicylic acid: the cresols into hydroxy-toluic acids ($C_7H_6.OH.CO_2H$), and the xylenols into hydroxy-xylenic acids ($C_8H_8.OH.CO_2H$), just as phenol proper is changed into a hydroxy-benzoic acid.§

The presence of some other acids besides true salicylic acid (ortho-hydroxy-benzoic acid) in the article of salicylic acid of commerce was reported by Mr. Williams in 1878.‖ He found the calcium salt of the foreign acid to be much more soluble in water than calcium salicylate is. By neutralizing a hot aqueous solution of salicylic acid with calcium carbonate, causing the salicylate of calcium to crystallize out as completely as practicable, and then acidulating the mother liquor, the unknown acid was obtained. In certain physical characters, this acid was found to be distinctly different from salicylic acid and from the other two hydroxy-benzoic acids. In the leading chemical reactions, however, the unknown acid was found to agree

* Paper read at the meeting of the Amer. Phar. Assoc. at Detroit.

† Kolbe, 1874: Jour. prakt. Chem. (2), 10, 89; Jour. Chem. Soc., 28, 360; Watts' "Dict. Chem.," 7, 1055; Proc. Am. Phar. Assoc., 23, 374; 27, 463. Schmitt, 1885; Jour. prakt. Chem. (2), 31, 397-411; Jour. Chem. Soc., 48, 984; Phar. Jour. Trans. (3), 5, 441.

‡ Biedermann and Pike, 1872. Ber. d. Chem. Ges., 5, 323; Watts' Dict., 7, 394; 8, 2,023.

§ The ortho-compound, $C_6H_4.OH.CO_2H$ (OH : CO_2H=1 : 2). The isomers and their homologues are given in Prescott's "Organic Analysis," pp. 394, 434, 443.

‖ J. Williams, 1878: Phar. Jour. Trans. (3), 8, 785; Proc. Am. Phar. Assoc., 26, 536.

with salicylic acid and the isomers of the latter. The acid liberated from the crystals of calcium salt, after purification, was found to agree in all points with true salicylic acid. Mr. Williams concluded that the acid not salicylic formed 15 to 25 per cent of the better grades of salicylic acid of the market. Very little further investigation of the presence and proportion of the homologous acids has been reported. In 1883, Dr. E. R. Squibb* gave the opinion that "the better grades of the well-crystallized acid of the market contain 4 to 5 per cent of something which is not salicylic acid," and for which, he says, he knows no test.

The physiological and therapeutic value of the homologous acids in medicinal salicylic acid are certainly deserving of careful study, in view of the large doses in which the agent is used and the somewhat variable effects reported of these doses.

1. A METHOD BY ACIDIMETRY.

The molecular weights of the homologous acids show the following differences, those of CH_2=13.97, in arithmetical increase.

Salicylic acid (hydroxy-benzoic acids), $C_6H_4.OH.CO_2H$=137.67.
Hydroxy-toluic acids, $C_7H_6.OH.CO_2H$=151.64
Hydroxy-xylenic acids, $C_8H_8.OH.CO_2H$=165.61.

And of hundredth normal solution of alkali $\left(\frac{N}{100}\right)$ needed to neutralize these acids and form monobasic salts:

1 gramme of salicylic acid requires 726.3 C.c.
1 gramme of a hydroxy-toluic acid requires 659.4 C.c.
1 gramme of a hydroxy-xylenic acid requires 603.8 C.c.

In the application of this method, it was assumed that hydroxy-toluic acids, $C_8H_8O_3$=151.64, fairly represent the total acids of molecular weight above that of salicylic acid. This can be justified both because there can be only a very small quantity of xylenols in carbolic acid of respectable quality, and because a given percentage of the xylenol-product would indicate a larger percentage of the less objectionable cresol-product. Thus, of the $\left(\frac{N}{100}\right)$ alkali solution to neutralize 1 gramme of the acid,

Hydroxy-toluic acids take 66.9 C.c. less than salicylic.
Hydroxy-xylenic acids take 122.5 C.c. less than salicylic.

One per cent of a hydroxy-xylenic acid would indicate 1.8 per cent of a hydroxy-toluic acid. Then *the saturating capacity of "salicylic acid"* made from carbolic acid will stand as follows:

FOR ONE GRAMME OF THE ACID TESTED.

Salicylic acid, absolute ...	.. ..	..726.3 C.c.	$\frac{N}{100}$	alkali.
" " with 5%	hydroxy-toluic.....	723.0	"	"
" " " 10%	"	...719.6	"	"
" " " 15%	"	....716.3	"	"
" " " 20%	"	....712.4	"	"
" " " 25%	"	....709.5	"	"

In making trial of the calculated saturating powers of salicylic acid and its homologues, potassa and soda were found to work equally well in the standard solutions $\left(\frac{N}{100}\right)$, and phenolphthalein proved thoroughly satisfactory as an indicator of the end-reaction, while litmus is wholy incapable of being used in this estimation. *The titrations are to be made as follows:*

About a fifth of a gramme of the acid to be tested, dried at or below 65° C. to constant weight, is accurately weighed, placed in a beaker of about a half-liter's capacity, some drops of the (alcoholic) solution of phenolphthalein added, and (without adding water for solution) the hundredth-normal solution of alkali is run in from the burette, while stirring, until the end-reaction is approached. The beaker is now placed upon wire cloth over the flame (or otherwise promptly heated) while gently stirred, only long enough to complete the solution of the acid, and without decided boiling, when the heat is removed, the beaker sides rinsed down with a little distilled water, and the titration completed. The weight taken : 1.000 :: C.c. required : x=C.c. for one gramme, to be compared with the table above.

In drying salicylic acid for a constant weight, it was found that this could be attained at 65° C., while at 70° to 75° C. there was a constant loss, in a short time sufficient to be registered by the balance. A portion of the purified acid from oil of wintergreen, placed between watch glasses, arranged for sublimation and heated to 115° C., promptly gave a sublimate of colorless crystals of good size. In aqueous solution, it suffers loss by boiling at common air pressure.

Acidimetry under the directions given above was tried upon a sample of purified acid from oil of wintergreen, a sample prepared for the purpose, in the way followed by Williams:† one ounce of oil of wintergreen was saponified by potassium hydrate solution, the liquid cooled and acidulated with hydrochloric acid, the precipitate four times crystallized from boiling water, the hot solution filtered through strictly purified animal charcoal and recrystallized, and lastly twice recrystallized from alcohol. The average of several titrations of this purified salicylic acid agreed very closely with the calculated quantity, 726.2 C.c. $\left(\frac{N}{100}\right)$ alkali for one gramme of the acid.

Applying the same volumetric reagents in the same way to a sample of salicylic acid of the ordinary market,* in four titrations an average of 714.3 C.c. was obtained—corresponding to a proportion of 15 to 20 per cent of homologous acids calculated as a hydroxy-toluic acid.

With titrations of good ordinary care, using verified instruments of such delicacy as every chemist requires for analytical work, acidimetry can reveal quantities of hydroxy-toluic acids as low as four or five per cent, other interfering impurities being absent.

II. A METHOD BY CONVERSION TO PHENOLS.

When salicylic acid and its homologues are distilled from lime they yield a distillate of their respective phenols, the elements of carbon dioxide being retained by the lime, so far becoming a carbonate. Subjecting commercial salicylic acid to this reaction, it was undertaken to apply to the distillate a limit test for composition of the produced phenols, namely, the test† by adding an equal volume of nine per cent solution of sodium hydrate, and then noting the number of volumes of water to be added to cause beginning precipitation. Experiments were undertaken, with mixtures of a fairly representative "cresylic acid" and good carbolic acid, to obtain limits of dilution for each 5 per cent addition of cresol in the mixture.

A "cresylic acid" of the market, of specific gravity 1.04, was found to yield results so far consistent that it was taken as an approximately representative cresol. Best carbolic acid of the market, with water just enough to liquefy it, was taken as phenol. From mixtures of these imperfectly poor articles, preliminary data were obtained, as set forth in the following table:

Volume per cent of cresol in the distillate.	Calculated weight per cent of hydroxy-toluic acid distilled.	After adding an equal volume of nine per cent sol. of soda, number volumes of water added before precipitation.
5	4.9	6.7
10	9.8	6.0
15	14.8	5.25
20	19.8	4.5
25	24.7	4.0
30	29.7	3.6
35	34.7	3.3
40	39.7	3.1
45	44.7	2.8
50	49.7	2.6

The conversion of the "salicylic acid" into its corresponding phenols was done as follows: 15 grammes of the acid and an equal weight of lime are thoroughly dried, well triturated together, placed in a glass retort, put over a strong heat, and quickly distilled, collecting the distillate in a well-cooled receiver. To promote the distillation, with great advantage dried iron filings may be added in equal quantity to the contents of the retort. When the distillate is complete, it is liquefied by adding just enough water.

The sample of commercial salicylic acid previously tested by the method of acidimetry was subjected to this process, and the distillate tested by an equal volume of 9-per-cent sodium hydrate, and subsequent dilution with measured water, until after stirring there remained visible precipitation. Five volumes of water were required, indicating, according to the table above, some proportion of hydroxy-toluic acid between 14.8 and 19.8 per cent, and agreeing substantially with the result by acidimetry.

It appears evident that a method by conversion of phenols can be made effectual for the estimation of homologous acids in the salicylic acid in use, and probably with closer results than those obtained by acidimetry.

III. SEPARATION BY SOLUBILITY OF THE CALCIUM SALTS. THE METHOD OF WILLIAMS.

This method, cited in the beginning of these notes, was the basis of the only estimation of the quantity of homologous acids in artificial salicylic acids which has come to the notice of the writers, and they have submitted it to a careful trial. The operation directed by Williams‡ was conducted three times successively. The products of each operation—that is, the salicylic acid of assumed purity, on the one hand, and the homologous acids assumed to be free from salicylic acid, on the other hand—were subjected to estimation by the method of acidimetry.

In each of the three operations, the salicylic acid was obtained from the crystals of calcium salicylate in excellent crystals, and in each case acidimetry gave results for pure salicylic acid. The mother liquors, treated for sep-

* Ephemeris, 1, 411, Nov., 1883.
† Phar. Jour. Trans. [3], 8, 785.

* In appearance the sample was an indistinctly crystalline powder of a slightly pinkish color.
† A. H. Allen, 1878: The Analyst, 3, 321; Allen's "Commercial Organic Analysis," 2, 551; Lunge's "Coal Tar Distillation," 63.
‡ 1878: Phar. Jour. Trans. (3), 8, 785; Proc. Am. Phar. Asso., 26, 536.

aration of the homologous acids,* yielded acid agreeing with that described by Williams—acid differing greatly from salicylic in physical properties. This "homologous acid," subjected to acidimetry, gave for 1 Gm. of the acid, (1) 705 C.c., (2) 699 C.c., and (3) 697 C.c., of the 100th-normal solution of alkali, the average being 700.3 C.c. By the average of these estimations, then, the "homologous acid" still retained 61 per cent of salicylic acid against 39 per cent of hydroxy-toluic acids, and in estimation (3), where the separation was carried further than in the other two trials, there remained over 50 per cent of salicylic acid. Indeed, the process of crystallization does not promise well for estimation unless by some system of allowances and for an approach toward exact determination.

UNIVERSITY OF MICHIGAN, August, 1888.

Arsenic in the Medicinal Bismuth Salts.

BY RICHARD E. HAWKES.†

THE quantity of arsenic in the subnitrate and subcarbonate of bismuth furnished in pharmacy has been reported upon by several analysts within the past few years.‡ The desire for increasing purity in bismuth preparations has led the writer to make estimation of the arsenic contained in a collection of samples of both of the pharmacopœial simple salts, as obtained from dispensing pharmacists here and there at different times. Seven samples of subnitrate of bismuth and seven samples of subcarbonate were taken.

The quantity of arsenic was determined by weight of the mirror of the reduced element, obtained under Marsh's plan, as used by Gautier,§ and improved by Chittenden,‖ the details being fixed as follows: Five grammes of the bismuth salt, accurately weighed, were gradually treated with diluted sulphuric acid, in the case of the nitrate heating until all nitric acid was expelled, and the mixture diluted with water to 120 C.c. About 30 grammes of zinc were placed in a flat-bottomed generating flask of some 400 to 500 C.c. capacity. The rubber stopper of the flask admits a separatory funnel, closed with stop-cock, and a connection with a drying tube filled with calcium chloride of neutral reaction, this joined by a flexible connection to the horizontal ignition-tube, of hard glass and about $\frac{3}{16}$ inch inner diameter for six or seven inches in length, then narrowed to about one-third its previous thickness for about two inches, and lastly bent at right angles to reach down into a short test-tube carrying 3 or 4 C.c. of silver nitrate solution. The ignition tube is supported for four or five inches by a single wrap of wire gauze, reaching within one-fourth of an inch of the narrowed part of the tube. The wire gauze is supported at its extremities, and a double or triple spread burner of the Bunson lamp is placed beneath so as to heat the whole of the wire gauze and preserve an even, low red heat in the ignition-tube for three to five inches, or throughout its wrapped portion. If the inner diameter of the ignition-tube be over four or five millimeters ($\frac{3}{16}$ inch), it should be heated to redness for more than three inches of its length with a slow evolution of the gas. The length of the ignited portion of the tube is to be proportional to its width and to the rapidity of the stream of gas. But the reaction in the silver nitrate solution will reveal the escape from the reduction of any weighable quantity of the arsenic.

Sufficient diluted sulphuric acid is introduced into the flask to clear the air, the rate of transmission of gas being indicated by the bubbling in the silver solution, and as soon as the air is all out, the ignition-tube is heated to redness. Purity of the zinc and sulphuric acid having been previously determined, the prepared solution of bismuth sulphate is gradually introduced through the separatory funnel, with additional diluted sulphuric acid if need be, to maintain a steady bubbling in the silver solution. If a mirror be obtained at the close of the operation, the section of the tube containing the mirror is cut out, wiped clean, cooled to the temperature of the balance, and weighed. The tube is heated over a smokeless flame until the arsenic is wholly expelled, then cooled, wiped again, and the empty tube weighed again.

In each of these tests the gas was passed through the heated tube for six hours. The zinc and sulphuric acid, in a trial for the same time, gave strictly negative results.

With the selected samples of bismuth salts, results were obtained as follows:

Subcarbonate of Bismuth.

No.	Taken.	Weight of mirror.	Arsenious Acid.	Per Cent.
1	5.000	0.0025	0.00330	0 0660
2	5.000	None.	....	....
3	5.000	A trace.	....	....
4	5.000	0.0001	0.00013	0.0026
5	5.000	0.0003	0.00040	0.0060
6	5.000	0.0005	0.00067	0.0133
7	5.000	0.0004	0.00053	0.0106

Subnitrate of Bismuth.

No.	Taken.	Weight of Mirror.	Arsenious Acid.	Per Cent.
1	5.000	0.0005	0.00067	0.0133
2	5.000	None.	....	....
3	5.000	A trace.	....	....
4	5.000	0.0003	0.00027	0.0053
5	5.000	0.0005	0.00067	0.0133
7	5.000	A trace.	....	....

From the experiments of others upon the limit of recovery of arsenic in its chemical separations,* it appears evident that the actual loss of arsenic, in working 5 grammes of material, should not have been at the very utmost over 0.00004 gramme, that is, the admissible error should not affect the tenths of milligram expressed in "weight of mirror." And in No. 2, subnitrate, and No. 2, subcarbonate, if arsenic were present, it was in proportion not above about 0.002 per cent; in No. 3, subcarbonate, and Nos. 3 and 7, subnitrate, not more than about 0.003 per cent.

Recounting the summarized results of the analysis cited at the beginning of this note, it appears that, of arsenious acid from bismuth subnitrate, Chittenden and L. obtained 0.013 per cent in average of 14 samples:

0.077 per cent maximum;
traces in 2 of the 14;
and none in 1 of the same.

Ledman obtained 0.0028 per cent, average of 11 samples,
with 0.0109 per cent maximum,
and traces only in 6 of the 11.

Haigh obtained 0.033 per cent, average of 5,
with trace only in 1 of the same.

Rambo obtained presence of arsenic in 2 only of 4 samples, under Fleitmann's test.

UNIVERSITY OF MICHIGAN, SCHOOL OF PHARMACY, July, 1888.

Calycanthus Seed.

(Abstract of paper by R. G. G. ECCLES, M.D., read at the Detroit meeting of the A. P. A.)

AT the meeting of the Torrey Botanical Club of New York City in December, 1887, Mr. E. E. Sterns exhibited specimens of the fruit of *Calycanthus glaucus* Willdenow, which he had received from Mr. J. H. Boyd, postmaster of Cagle, Sequatchie County, Tennessee. A letter from Mr. Boyd was read, which, with other interesting information, contained the following: "Hundreds of cattle and sheep have died here in the past five years from 'bubby' (the local name of Calycanthus). The seeds only are poisonous. When a brute gets a sufficient dose, from five to ten well-filled pods, it makes for the nearest water, and often falls dead while drinking, or it may live three or four weeks and then die. The symptoms are like those of a man extremely drunk, except that any noise frightens it. Stamp the ground hard, close to a brute poisoned with 'bubby,' and it will jump and jerk and tremble for several minutes. That is our method of telling when they have taken it. The eyes turn white and glassy, and while lying they throw back their head and look as if dead already. 'Bubby' does not seem to hurt the brute so much if it cannot get water. Our best remedy is apple brandy, strong coffee, and raw eggs poured down as soon as possible after finding. It is certain that 'bubby' is the most poisonous of any shrub weed in existence here, from the fact that, when brutes have once eaten it, they will take it every time they can get it. It grows on every hillside, along all branches (creeks), in every fence-corner, and almost everywhere here."

Men living miles apart have told the same story of the effects produced by eating the achenia. The Loco, or Crazy Weed of the West, has had a similar reputation; but chemical investigation failed to discover anything to which such therapeutic effects could be attributed. With calycanthus, however, we have the testimony of intelligent observers as to its toxic effects. Dr. B. W. Sparks, of McMinnville, Tennessee (*Torrey Bulletin*, August, 1888, p. 208), writing to Mr. Sterns, under date of June 11th, 1888, says: "In regard to the 'bubby,' 'sweet shrub' (*Calycanthus glaucus* Willd.), if you ask me, do I believe this plant to be poisonous to cattle and sheep? Most as-

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* The acid not salicylic has usually been designated in the singular number and it may be that only one homologous acid occurs in the manufactured article. But as there are three isomeric hydroxy-toluic acids, to say nothing of the hydroxy-xylenic, and in absence of any identification of these isomers in "homologous acid," it is well to recognize their existence in the plural. Melting points of the hydroxy-toluic acids have been reported as follows:

Acid $-CO_2H$: OH : CH_3 = 1 : 2 : 3—melting at 160° C.
Acid " " " = 1 : 2 : 4— " " 173° C.
Acid " " " = 1 : 2 : 5— " " 151° C.

† Paper read at the Detroit meeting of the A. P. A.

‡ Chittenden and Lambein, 1882: Amer. Chem. Jour., 3, 398; Jour Chem. Soc., 42, 573.
O. S. Ledman, 1883: "Contributions Chem. Lab. Univ. Mich.," 2-61.
The Physician and Surgeon, Ann Arbor, 5, 341.
D. L. Haigh, 1886: Proc. New York State Phar. Assoc., p. 203; Druggists' Circular, 30, 206; Proc. Am. Phar. Assoc., 34, 518.
S. L. Rambo, 1890: Am. Jour. Phar. Assoc., 58, 505; Proc. Am. Phar. Assoc., 35, 230.
Taylor's "Treatise on Poisons," 1875, Philadelphia, p. 470.
"Trials for Murder by Poisoning," 1883, London, p. 510.
Wharton's and Stille's "Med. Jurisprudence," II., 1884. Amory and Wood, pp. 283, 571.

§ A. Gautier, 1876: Bull. Soc. Chim. (2), 24, 258.

‖ Chittenden and Donaldson, 1880: Am. Chem. Jour., 2, 239.

* Control Analyses," Prescott, 1885: Proc. Am. Assoc. Adv. Sci., 34, 113: Chem. News, 53, 78, et seq.

surely it is. It will poison cattle, sheep, goats, deer, and all other ruminating animals, but does not have any effect on the horse, mule, and ass. At least this is my experience. It will poison the squirrel, rat, and dog, when ground or unground. I cannot speak for the hog family. I have known and made many experiments on rats and dogs. It is as sure death to them as strychnine or arsenic; symptoms in overdoses identical with those of strychnine, which I need not repeat. In my opinion, it contains an alkaloid allied to strychnine." (Ibid., p. 209.)

(Abstract.) During the last week in January and the first half of February, Dr. Eccles endeavored to isolate any active principle the suspected achenia might contain. The results were so far successful that an alkaloid was isolated and named *Calycanthine*, from the genus of plants in which it was procured. Another alkaloid was then suspected, which subsequent investigation failed to isolate, although there are still indications which point to its presence.

In grinding the achenia, the large quantity of fixed oil they contain is at once made manifest. In the powdered condition, a few seconds' contact with paper saturates it. To finely powder them before abstraction of this is manifestly impossible. Rhigolin, benzin, and other forms of petroleum spirit remove it completely, and they do not seem to appreciably disturb any other constituent. The barest trace of alkaloid is taken up after hours of percolation in a Soxhlet apparatus, or macertation for weeks. The oil is practically the only thing removed. One hundred grammes of achenia so treated, weigh, after washing with same kind of solvent and drying, only a little over sixty-one grammes, and the extracted oil, after evaporation, nearly thirty-nine grammes. If the alkaloid were absent, the seeds would make excellent fattening, especially as most of the remaining sixty-one parts is starch and albumin. It is really not to be wondered at that animals want to eat them after becoming accustomed to the bitter taste. No drug, according to the author, ferments as readily in the presence of water as do these seeds. Licorice root does not approach it in this respect. Possibly this accounts, in some measure, for the observed physiological effects upon ruminants.

If the alkaloid is, as Dr. Sparks suggests, analogous to strychnia, it certainly has nothing like its potency in affecting man. Twenty achenia, weighing 2.7 Gm., were freed from their pericarps, and eaten without toxic symptoms of any kind. The lot from which they were taken showed the presence of 2¼ per cent of alkaloid.

The alkaloid is slightly soluble in water, and very soluble in ether or chloroform. Its salts are insoluble in the latter substances, but very soluble in water. Its most characteristic color reaction is the development of a green on the addition of a strong nitric acid. The purer the alkaloid, the finer the color. Other reactions are yellow with strong sulphuric acid, a pale canary with strong muriatic acid which gradually changes towards orange, a rose red with bichromate of potassium and strong sulphuric acid, and a pink red if sugar is used instead of bichromate.

The ether extract of Calycanthus, after all the oil has been removed with petroleum spirit, contains little more than alkaloid and coloring matter, and yet it leaves some of these behind; alcohol takes up what is left. Dilute mineral acid, when agitated with the ether extract, washes out the active principle, leaving barely a trace behind. The ether becomes milky on the addition of the acid, but soon clears up on shaking. Water of ammonia or solution of soda precipitates the alkaloid from the acid solution again; and on washing this with ether, we have it in a pretty pure state. Spontaneous evaporation of the ether leaves the alkaloid in crystals. Procured in the manner here indicated, it has only the faintest suggestion of the odor of pyridine. When first taken from the powdered seeds by means of alcohol, this evaporated, dilute sulphuric acid added, made alkaline with ammonia, and washed out with ether, the pyridine odor is very decided and persistent. This seems to indicate that the pyridine is a product of chemical decomposition of the alkaloid.

[The author then refers to the existing theories regarding the relationship of alkaloids to pyridine, and points to the base obtained from Calycanthus as a possible key to unlock the mystery.]

When ten per cent hydrochloric acid is used to remove calycanthine from ether in which has been extracted, and allowed to stand a few days, it suffers some slight decomposition, forming a brown solution. The alkaloid in this solution is very readily saponified by caustic potash and heat. The new alkaloid formed has not yet been named, although isolated in handsome crystals. The change is remarkable in that it develops a *strong, sweet odor, like that of oil of Ylang Ylang*. The structure of this oil awaits investigation, as does that of a dense precipitate that goes down with the newly-formed alkaloid on the application of the caustic soda. The quantity of the aromatic product must be considerable, as the odor from a fraction of a grain of alkaloid lingers for days. The suggestive interrogations that crowd in here are of the most interesting character, and make one wish that he had all his time for at least a year, free from other cares and able to devote the same to the solution of the problems here involved. It certainly seems as if there must be some connection that can be synthetically bridged between benzoic acid and our most fragrant and costly essential oils, and that the way is here indicated. Cannot some of our chemists who have more time at their disposal than the writer take the matter up and give it a thorough investigation? From a commercial standpoint, it is my belief that there is money in it. The abundance of the shrub in its native habitat guarantees an almost limitless supply. The essential oil of leaves, flowers, and bark would be well worth isolating as a rich ether for soda-water flavoring. The fixed oil constitutes more than one-third of the total weight of the seed, and is, when unaffected by high temperature, of a pleasant taste and odor. This would add materially to the income of any one who would try to utilize the shrub commercially. Although the therapeutic properties of the alkaloid have not yet been developed, little doubt can be entertained of its having some specific action upon the nerve centres that can be turned to use. Certainly the decomposition product that possesses so powerful and pleasant an odor would be immediately utilized by perfumers, and should it prove to be identical with oil of Ylang Ylang, the new supply might soon outrival the old in this, our most expensive essential oil. The remaining starchy and albuminous material would make good fattening and harmless food for hogs, chickens, or cattle. The ferment might prove valuable to chemists and physicians, and certainly it is active enough, if we may judge from its prompt results. Thus, to pharmacists, physicians, chemists, perfumers, confectioners, and farmers, it opens up interesting possibilities. The whole seed can be utilized, part in one direction, and part in another. Should any one single item be inadequate to support an industrial plant, surely the combination of all would be sufficient. It certainly looks worthy of further and more careful investigation.

The Preparation of Mercurous Iodide.*

BY EDWARD SOETJE.

THE great trouble I had in making a sample of this salt by the tedious, and I might say uncertain process of the the U. S. P., led me to investigate the subject of finding an easier and better method of manufacture. That the U. S. P. method is tedious, any who has tried it can testify. That the purity of the product is uncertain, can be seen by the number of washings required.

Washing with alcohol takes out the mercuric iodide, but the iodine and mercury are present in nearly the exact proportions to form mercurous iodide, so it will be seen that for all the mercuric iodide formed, a corresponding amount of metallic mercury is left. This cannot be washed out, and so will be left as an impurity with any mercuric iodide remaining.

As far as I can find, only four other methods of preparing this salt have ever been proposed: first, by triturating mercuric iodide with the right proportion of mercury; second, by precipatation of a double salt of sodium pyrophosphate and mercurous acetate with potassium iodide; third, by treating calomel with potassium iodide; and fourth, double decomposition between mercurous nitrate and potassium iodide. The first process is open to the same objection as that of the U. S. P. The second is hardly of practical value, on account of the difficulty of making mercurous acetate, and the increase in cost by the pyrophosphate, while nearly the same objections can be offered as to number four. When made by the third method, the product is liable to contain calomel and some mercuric iodide and metallic mercury may also be formed. Number four, while having a few objections, seems to offer us a quick and certain process, giving a purer product than can be obtained by any other method unless it be number two. One of the difficulties of this method is to make a pure mercurous nitrate. This I managed to do by the following process:

Hydrargyri Nitras.

$Hg_2(NO_3)_2\ H_2O$; 541.4.

Mercury	10 parts
Nitric Acid	5 "
Water	4 "

Mix the acid and water, and pour upon the mercury. Set aside to react in the cold, shaking briskly from time to time to remove any coating of nitrate which may have formed around the globules of mercury. When the reaction has ceased, the crystals of mercurous nitrate are separated from the mother liquor and any metallic mercury remaining, by pouring on to a filter through the bottom of which several small holes have been punched. A second crop of crystals may be obtained by concentrating the mother liquor, or more nitric acid may be added to dissolve the remaining mercury, if any. If the crystals are to be kept for any length of time, they should be washed on the filter with a small quantity of a mixture of water 100 parts and nitric acid 1 part.

The crystals are then dried between bibulous paper without heat. I made mercurous nitrate several times by this process, testing the product each time for mercuric salt, by dissolving, precipitating, as calomel, with hydrochloric acid, filtering, and treating the filtrate with hydro-

* Paper read at the meeting of the A. P. A. at Detroit.

gen sulphide, which failed to give even the slightest trace of precipitate. One sample was kept for over a month in a bottle without any attempt to exclude light, and then tested as before, with the same result.

From this it would seem that the salt can be made pure, and, by taking ordinary precautions as to exclusion of air and light, be kept pure for use as required. After the mercurous nitrate is made, the iodide can easily be prepared by the following formula:

Mercurous Iodide.

Hg_2I_2; 652.6.

Mercurous Nitrate..... 10 parts
Potassium Iodide..... 6 "
Nitric Acid,
Water..... each, a sufficient quantity

Dissolve the mercurous nitrate in four hundred parts of water containing four parts of nitric acid, and the potassium iodide in four hundred parts of pure water, both in the cold. Pour the solution of the iodide slowly into that of the nitrate, stirring briskly, and allow to stand for five minutes. When the precipitate has subsided, decant off most of the liquid, and transfer the precipitate on to a filter. Wash the precipitate several times with water and dry at a temperature of not over 50° C., keeping from strong light as much as possible during the whole process.

The product obtained by this method is of a bright yellow color, instead of a green. C. H. Wood, F.C.S., in an article in the *Amer. Jour. of Pharm.*, Vol. xl., 337, gives the result of an analysis of a sample of green and a sample of yellow mercurous iodide, which proves that the yellow is purer by far, containing much less mercuric iodide and uncombined mercury than the green. My time being too limited, I did not try this experiment, but accepted the conclusions of this analyst, especially as they had been substantiated by others. From an estimation of this salt, I obtained an average of 60.83% of mercury and 38.13% of iodide, the per cent in the pure salt being 61.16 of mercury and 38.84 of iodide, a very little over 1% being unaccounted for in my estimation. One gramme of the salt being treated with 10 C.c. of alcohol as directed by the Pharmacopœia, the alcohol dropped into water gave no opalescence whatever, and 5 C.c. evaporated on a watch-glass left only a very small residue, which was not red. That very little mercuric iodide is formed is shown by testing the first filtrate with hydrogen sulphide, which gives a scarcely perceptible precipitate, and the mercuric salt, if present at all, would be in the filtrate, as it contains a slight excess of potassium iodide. As no mercuric iodide is formed, no metallic mercury can be left. The first washings of a sample made according to the Pharmacopœia gave a heavy precipitate with hydrogen sulphide.

A sample of mercurous iodide made by the above process, showed no change in color after standing three months in a bottle kept in a little wooden box, thus at least partly proving its stability.

Peppermint Oil.*

BY A. B. STEVENS.

MUCH stress has been laid on the polariscope as a test for the purity of oil of peppermint.

While it is without doubt a useful, and to the larger purchasers of the oil a valuable aid, its expense is such as to place it beyond the reach of the retail dealer. Again, valuable as it is, and may be, even those whose moneyed means will admit the purchase of a polariscope cannot wholly depend upon it as a test of purity, as the variation in different samples of pure oil is great, ranging from −35 to −55°. An oil having a high polarizing power may be largely adulterated, or it may be dementholized, and still be above −35°.

It is stated by A. M. Todd (*Amer. Journ. Phar.*) that menthol has a very low polarizing power, and that an oil having a polarizing power of −74° from which 16 per cent of menthol had been removed showed a decrease of only 3°. The simple fact that the polarization was decreased at all, when the volume of the oil was reduced 16 per cent, proves that the polarization of the menthol must be greater than that of the oil from which it was taken.

The writer finds that both Japanese and American menthol have a polarizing power of from −95° to −100°. This was obtained by dissolving 10 Gm. of menthol in 20 C.c. of alcohol (giving a volume of 31.5 C.c.). The solution had a polarizing power of −33°.

As this solution was only one-third menthol, it must necessarily be increased threefold to obtain the polarization of pure menthol, viz., −99°.

The reason of Mr. Todd's failure to obtain the true polarizing power of menthol was doubtless due to the fact that he attempted to obtain it by reducing the menthol crystals to a liquid state by heat, instead of dissolving it in a non-active liquid.

The writer would recommend the following as the most reliable test for the presence of oil of camphor in peppermint oil.

Place a drachm of nitric acid (sp. gr. 1.42) in a test tube, add one drop of the suspected oil, and agitate gently, and set aside for a few minutes. The mixture will be of a yellow color, and if pure, will remain the same. If as low as 5 per cent of oil of camphor is present, the mixture will turn red within fifteen or twenty minutes.

While experimenting with various reagents, it was found that iodine was decolorized by oil of peppermint. We then endeavored to find the limit of decolorization. Therefore, a volumetric solution of iodine was prepared according to the United States Pharmacopœia, but displacing part of the water with alcohol, and we proceeded as follows:

To 2 C.c. of oil was added 5 C.c. sol. iodine and 10 C.c. of alcohol. The whole was agitated thoroughly and allowed to stand ten minutes. Then from the excess of iodine, by titration with a volumetric solution of hyposulphite of soda, by repeated experiments it was found that the reaction proceeded until nearly 10 minutes had expired, but no change occurred after that time. During these experiments it was found that alcohol prevented oxidation or decolorization of the iodine. To ascertain to what extent the alcohol prevented the action, a fresh volumetric solution of iodine was prepared without alcohol, when it was found that the quantity of iodine decolorized increased as the quantity of alcohol was decreased. To complete the reaction, it required constant agitation for 10 minutes. By this method 1 C.c. of oil decolorized 30 C.c. of iodine solution.

	Polarization.	Freezing Mixture −25° C. (12.5° F.).	Nitric Acid test for Oil Camphor.	Vol. Sol. iodine decolorized by 1 C.c. of oil.	
				With Alcohol.	Without Alcohol.
1 Pure Oil Peppermint.	−55°	Solid.....	Yellow.	....	....
2 Pure Oil Peppermint.	−44°	Solid.....	Yellow.	....	....
3 Pure Oil Peppermint.	−38°	Solid.....	Yellow.	1.5 C.c.	30 C.c.
4 No. 3 Dementholized Oil Peppermint.	−34°	Slightly crystalline.	Yellow.	1.6 C.c.	33 C.c.
5 No. 3 Dementholized Oil Peppermint.	−30°	Semi solid	Red....	.85 C.c.	....
6 No. 3 Dementholized Oil Peppermint.	−34°	Nearly solid	Light red.	1.55 C.c.	....
7 No. 3 Dementholized Oil Peppermint.	−25°	Cloudy...	Red....	...	....
8 No. 3 Dementholized Oil Peppermint.	−48°	Semi-solid	Yellow.	....	....
9 No. 3 Dementholized Oil Peppermint.	−57°	Solid.....	Yellow.	....	....
10 No. 3 Dementholized Oil Peppermint.	−48°	Solid.....	Yellow.	....	...
11 No. 3 Dementholized Oil Peppermint.	−25°	Cloudy...	Red ...	...	....
12 No. 3 Dementholized Oil Peppermint.	−48°	Cloudy...	Red....	....	....
Alcohol 2 parts, Menthol 1 part.	−33°	.....	Yellow.	None...	0.3 C.c.
Dementholized Oil 2 parts and Menthol 1 part.	−55°	.....	Yellow.	1 C.c. ..	23.1 C.c.
Oil Pennyroyal.....	+53°	.....	Yellow.	0.2 C.c.	9.7 C.c.
Oil Camphor, red....	+29°	.....	Red....	0.7 C.c.	....
" " refined.	+34°	.....	Red ...	None...	9.1 C.c.
Oil of Turpentine....	+31°	.....	Yellow.	....	....
No. 1* 3 P. + Pennyroyal 1 P.	−29°	.....	Yellow.	1.1 C.c..	24 C.c.
No. 1 3 P. + Oil Camphor 1 P.	−31°	.....	Red....	1.4 C.c..	23 C.c.
No. 1 3 P. + Turpentine 1 P.	−32°	.....	Yellow.	1.6 C.c..	24.2 C.c.

Various mixtures of pure oil and some of the common adulterations were next subjected to a freezing mixture of −25° C. (12.5° F.), as follows:

Per Cent of Adulteration.

	5%	10%	25%
Alcohol.....	Liquid.....	Liquid.....	Liquid.. ...
Oil Pennyroyal.....	Solid.....	Nearly solid.	Liquid.....
Oil Camphor.....	Solid.....	Nearly solid.	Liquid.....
Turpentine.....	Solid.....	Nearly solid.	Liquid.....

The writer is by no means content with the work done, but intends to continue it during the coming year. Mr.

* Paper read at the Meeting of the A. P. A. at Detroit.

* No. 1 refers to the No. 1 Oil Peppermint, above.

A. M. Todd has kindly promised a supply of oil with which to continue experiments.

The writer is indebted to Mr. H. D. Cushman for a sample of pure oil, also sample of same dementholized. We acknowledge the indebtedness and return our hearty thanks.

Phosphomolybdic Acid for the Quantitative Estimation of Alkaloids.

(Abstract of paper by H. W. Snow, Ph.C., read at the Detroit meeting of the A. P. A.)

THIS paper was written to show the unreliable results obtained with the phosphomolybdic acid or phosphomolybdate of sodium which the market affords, when applied to the quantitative estimation of alkaloids. Even when the same maker's product was used, parallel experiments yielded different results. This circumstance, in addition to the uncertainty as to the exact constitution of the precipitate, which may possibly contain ammonia in addition to alkaloids, renders any general reliance upon the reagent for quantitative purposes unadvisable. (The author gives a detailed account of his experiments and a synoptical table of results, which is here omitted.) Yet the reagent may be used in certain cases with a tolerable degree of accuracy. In solutions containing pilocarpine, the reagent produces a faint opalescence, even when applied to 5 C.c. of a solution containing only 1 part of the alkaloid in 75,000. Gelsemine also responds to the reagent very readily. With coniine, it reacts when only 1 part in 5,000 or 6,000 are present, while Mayer's reagent will fail even with solutious of 1 in 2,000.

The reagent is prepared by dissolving 5 Gm. of phosphomolybdate of sodium in a mixture of 90 volumes of water and 10 vol. of pure nitric acid (full strength, about 69% absolute acid), so as to make 100 C.c.

The author expects useful and practical results by applying the reagent volumetrically, determining its value first upon a definite quantity of known material.

The Composition of Precipitated Sulphate of Iron.

(Abstract of a paper by Prof. Henry Trimble, read at the Detroit meeting of the A. P. A.)

As inquiry at several stores in Philadelphia revealed the fact that this officinal preparation is not usually kept in stock, I made the experiments on four samples prepared by myself. No. 1 was made according to the U. S. P. No. 2 according to the Br. P., with the quantity of water reduced to 20 per cent, and without boiling the solution. No. 3 according to the proportions of the Br. P., omitting the boiling; as this solution was quite dilute, the yield was small. No. 4 was made exactly according to the directions of the Br. P. This authority directs that the solution be boiled for ten minutes in an open dish, but leaves one in doubt whether to take into account the loss by evaporation or not; therefore, if the strength of the solution and consequently the proportion of alcohol affect the composition, it will be shown by samples 3 and 4. The directions for getting rid of adhering moisture and acid are not so exact as our own, consequently a slight excess of acid will be found in the Br. P. samples. In the following results, the amount of iron was determined by both gravimetric and volumetric methods, the latter being by titration with potassium permanganate. The results by the two methods were not materially different. The sulphuric acid was determined by barium chloride.

	No. 1. U. S. P.	No. 2. Br. P. less 20% Water, not boiled.	No. 3, Br. P. Not boiled	No. 4. Br. P.	No. 5. Larger Crystals.	Theoretical.
Fe . .	20.48%	20.86%	20.35%	20.37%	20.53%	20.12%
SO_4 . .	35.40"	35.84"	35 40"	35.44"	36.40"	34.54"
H_2O . .	44.12"	43.30"	44.25"	44.19"	43.07"	45.34"
Total. .	100.00	100.00	100.00	100.00	100.00	100.00

No. 5 settled out from the filtrate of No. 3, which was more dilute than the others and therefore contained a larger quantity of the salt. The deposit took place during three weeks, in granular crystals much larger than in the other samples.

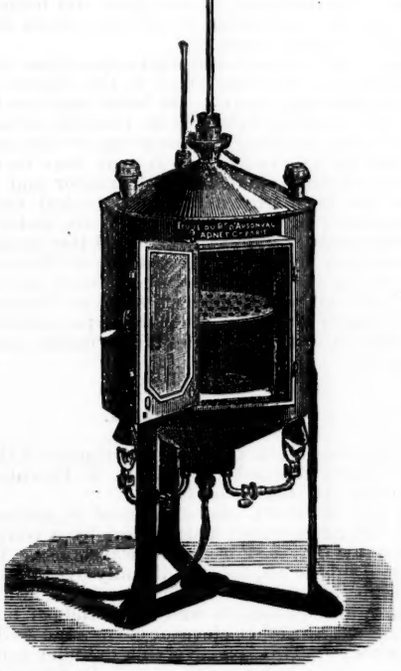
None of the specimens when first made gave more than slight indications of ferric iron, and the determinations by potassium permanganate failed to indicate any appreciable quantity. The above results are sufficient to show that the s lt precipitated under different conditions is of constant composition. It is identical with the large crystals, keeps well in glass-stoppered bottles, but loses water, and is slowly oxidized by exposure to air.

Picrate of Iron, locally applied in aqueous solution, is reported to be one of the most effective remedies to stop bleeding from the nose. The ferric picrate is the salt in question, which has the composition $Fe_2O.2C_6H_2(NO_2)_3O$.

A NEW THERMOREGULATOR.

A. D'ARSONVAL describes a new thermoregulator, combined with drying oven, in *L'Union Pharmac.* (1888, 352).

In this apparatus the thermoregulator forms an integral part of it. It consists of a metallic box, formed of grooved or corrugated plates, such as are used for aneroid barometers, and constitutes the central part of the lower cone of the oven. The gas is admitted to the regulator by a central inlet, and passes, through two lateral branches provided with stop-cocks, to the two burners, each of which is surmounted by a small hood. The stop-cocks are so constructed that air can be admitted by turning them, whereby the flames become non-luminous, and serve as Bunsen burners. The heat of the flame is conveyed through a series of tubes passing through the liquid contained between the double walls of the apparatus, on the principle of a vertical tubular boiler. The space between the walls is filled with water from which the air has been driven out by boiling, which may be done in the apparatus itself. If a higher temperature than 100° C. is required, a sufficient amount of glycerin is mixed with the water. The upper cone of the apparatus is provided with a neck bearing a cork and glass tube. When the liquid in the apparatus expands by heat, it rises in the tube, and the additional



D'Arsonval's heat-regulator.

pressure causes the regulator at the bottom to collapse, in proportion to the pressure, thus diminishing the amount of gas conducted to the burners. Another neck is fitted with a thermometer passing into the interior of the apparatus. The inventor claims that the regulation of temperature may easily be adjusted for any desired degree. The interior is accessible through a door at the side, and is divided into several compartments. To prevent evaporation of water from the upright glass tube, the author recommends to introduce into it a drop of kerosene.

The author uses the apparatus also for obtaining temperatures below that of the surrounding air. For this purpose, he causes water from the water service (provided this has the desired temperature) to pass through the tubes between the walls.

The True Source of Star Anise.

FROM a paper by Mr. E. M. Holmes in the *Pharm. Journ.* of August 11th, we take the following important note on star anise:

In December, 1880, notwithstanding the publication of *Illicium anisatum* as the botanical source of star anise in Bentley and Trimen's "Medicinal Plants," Dr. Bretschneider, then medical officer to the Russian embassy at Peking, in "Notes on Some Botanical Questions Connected with the Export Trade of China," states "the plant which produces this article is still unknown to botanists," and he then goes on to remark: "The first authentic information concerning the actual habitat of the star-anise tree was furnished by Mr. Piry, in his 'Report on the Trade of Pakhoi,' for the years 1878-1879, in which star anise is said to be brought for exportation in Kin-chow and Pakhoi from the province of Kuangsi, two districts in that province

producing the article; Lung-chow, on the borders of Annam; and the country about Po-se, on the West River, close to Yunnan."

Dr. Bretschneider adds a translation from the well-known work on Chinese materia medica and natural history, "Pen t'sao kang mu," vol. XXVI., fol. 62, in which it is stated that star anise grows in the mountains near the Tso-kiang and Yu-kiang (rivers), and that the kind most valued in China grows in Kuangsi and Kuangtung, and in Annam. Dr. Bretschneider remarked that both the above rivers are in Western Kuangsi, the first being a tributary of the West River. The city of Po-se mentioned by Mr. Piry is situated on it. The Tso-kiang is a southern tributary of the Yu-kiang. These notes appear to have attracted the attention of the late Dr. Hance, who, in October, 1881, forwarded seeds of the true plant received from Pakhoi to Kew. In the same year, fruit and fragments of the leaves were forwarded by Mr. C. Ford from the Hong-Kong Botanical Gardens to Kew. A few seedlings of the plant obtained by Mr. Kopsch, Commissioner of the Chinese Imperial Maritime Customs at Pakhoi, were grown in the Hong-Kong Gardens, and flowered in November, 1886, when the plants had attained a height of nine feet. Some seedlings sent by Mr. Ford to Kew in 1883 flowered at Kew in 1887, and from these the excellent plate given in [a recent number of] the *Botanical Magazine* was drawn.

Sir Joseph Hooker points out that the plant must be placed in quite a different section from that to which *Illicium anisatum* L. belongs, since it has broad, obtuse perianth segments, and the peduncles are not bracteate at the base. He describes it as a new and hitherto undescribed species, and names it *Illicium verum* Hooker fil. (description omitted here).

The leading features in the plant appear to be the solitary axillary globular flowers, which do not expand fully, the segments remaining convex, the inner segments being red, and the ten stamens, in which the filament forms with the connective an ovoid body. The peduncles are curved and barely half an inch in length. It may here be remarked that a very similar plant, but with smaller and yellowish flowers, has been grown at the Botanical Gardens at Regent's Park, for the last eighteen years, under the name of *Illicium anisatum*, but the leaves of this species have a sassafras taste. They differ from those of *Illicium religiosum* in having the midrib prominent below and depressed on the upper surface of the leaf, while in *Illicium religiosum* the midrib is prominent on the upper, and not on the lower surface, and the taste is astringent and therebinthinous.

Cotton-Seed Oil.

THE following is taken from a description of the cotton-seed oil industry furnished by Mr. A. E. Thornton to a reporter of the *Atlanta Constitution:*

From the platform where the seed is unloaded, it is thrown into an elevator, and carried by a conveyor—an endless screw in a trough—to the warehouse. Then it is distributed by the conveyor uniformly over the length of the building, about 200 feet. The warehouse is nearly half-filled now, and thousands and thousands of bushels are lying in store. Another elevator carries the seed up to the "sand-screen." This is a revolving cylinder made of wire cloth, the meshes being small enough to retain the seeds, which are inside the cylinder, but the sand and dirt escape. Now the seeds start down an inclined trough. There is something else to be taken out, and that is the screws and nails and rocks that were too large to be sifted out with the sand and dirt. There is a hole in the inclined trough, and up through that hole is blown a current of air by a suction fan. If it were not for the fan, the cotton seed, rocks, nails, and all would fall through. The current keeps up the cotton seed, and they go on over, but it is not strong enough to keep up the nails and pebbles, and they fall through. Now the seed, freed of all else, is carried by another elevator and endless screw conveyor to the "linter." This is really nothing more than a cotton gin with an automatic feed.

Then the seed is carried to the "huller," where it is crushed or ground into a rough meal about as coarse as the ordinary corn "grits." The next step is to separate the hulls from the kernels, all the oil being in the kernel. Hence the crushed seed is carried to the "separator." This is very much on the style of a sand screen, being a revolving cylinder of wire cloth. The kernels, being smaller than the broken hulls, fall through the broken meshes, and upon this principle the hull is separated and carried direct to the furnace, to be used as fuel. The kernels are ground as fine as meal, very much as grist is ground, between corrugated steel "rollers," and the damp, reddish-colored meal is caried to the "heater."

The "heater" is one iron kettle within another, the six-inch-steam space between the kettles being connected direct with the boilers. There are four of these kettles side by side. The meal is brought into this room by an elevator, the first "heater" is filled, and for twenty minutes the meal is subjected to a "dry cook," a steam cook, the steam in the packet being under a pressure of forty-five pounds. Inside the inner kettle is a "stirrer," a revolving arm attached, at right angles, to a vertical shaft. The stirrer makes the heating uniform, and the high temperature drives off all the water in the meal, while the fixed oil all remains.

In five minutes the next heater is filled; in five minutes the next, etc.

Now there are four "heaters;" and as the last heater is filled, at the end of twenty minutes, the first heater is emptied. Then, at the end of five minutes, the first heater is filled, and the one next it is emptied, and the rotation is kept up, each heater full of meal being "dry-cooked" for twenty minutes.

Corresponding to the four heaters are four presses. Each press consists of six iron pans, shaped like baking-pans, arranged one above the other, and about five inches apart. The pans are shallow, and around the edge of each is a semi-circular trough, and at the lowest point of the trough is a funnel shaped hole to enable the oil to run from one pan to the next lowest, and from the lowest pan to the "receiving tanks" below.

As soon as a "heater" is ready to be emptied, the meal is taken out and put into six hair sacks, corresponding to the six pans in the press. There are six hair mats, about one foot wide and six long, one side of each being coated with leather. The hair mat is about an inch thick. Now the hair sac, containing ten and a half to eleven pounds of heated steaming-meal, is placed on one end of the mat, and the meal distributed so as to make a pad or cushion of uniform thickness. The pad of meal is not quite three feet long, a foot wide, and three inches thick, and the hair mat is folded over, sandwiching the pad, and leaving the leather-coating of the pad outside. In this form, the six loads are put into the six pans, and by means of a powerful hydraulic press the pans are slowly pressed together. The oil begins trickling out at the side, slowly at first, and then suddenly it begins running freely. The pressure on the "loads" is three hundred and fifty tons. After being pressed about five minutes, the pressure is eased off and the "loads" taken out. What had been a mushy pad three inches thick is a hard, compact cake about three-quarters of an inch thick, and the sac is literally glued to the cake. The crude oil has a reddish, muddy color, as it runs into the tanks. In each mill, there may be seen lying great heaps of sacks of yellowish meal—the cakes which have been broken and ground up into meal. That, as explained above, forms the body of all fertilizers. The following is a summary of the work for the eight months' season at the Atlanta mills:

15,000 tons of seed used give:
15,000,000 pounds of hull.
10,331,250 pounds of meal.
4,668,750 pounds of oil.
300,000 pounds of lint cotton.

The meal is worth at the rate of $6 for 700 pounds, or $88,603.58.

The oil is worth 30 cents a gallon, or 7½ pounds, or $186,750.

The lint is worth $18,000, making a total of $293,393, and that does not include the 15,000,000 pounds of hull.

Note on the Digestion of Fermented Milk or Koumiss.

MR. T. R. POWELL publishes the following paper in the *Pharm. Journal* of August 25th:

As far as I am aware, no suggestion has hitherto been offered which explains the retention of fermented milk or koumiss by the stomach when all other nourishment has been rejected. The following rough experiments may perhaps throw some light on the subject, which at all events deserves more attention than it has yet received.

It is, of course, well known that, if milk to which a few grains of pepsin and a few drops of hydrochloric acid have been added, be gently warmed, coagulation takes place almost immediately, the casein or cheese separating in a more or less solid condition, a similar coagulation probably taking place whenever milk is acted upon by the gastric juice of the stomach.

To render milk more digestible, lime-water or aërated water is often added, in various proportions. Dilute, therefore, a portion of milk with a fourth part of aërated water, and add a few grains of pepsin, when it will be found that coagulation will take place almost as quickly as in a mixture of milk and water; but the condition of the two precipitates will differ somewhat, the casein separated in the presence of carbonic acid water being in a finer state of division and therefore more readily digested. If, however, lime-water be substituted for the aërated water, the effect is far more decided, coagulation being delayed for some time, and the precipitate, when it at at length falls, being, as in the previous case, very finely divided.

Koumiss or fermented milk, when freshly prepared, effervesces but slightly and resembles ordinary milk; but as the fermentation proceeds, lactic acid is formed, coagulation takes place, and the thick liquid becomes charged with carbonic acid. If, at this stage, two or three ounces be drawn off by a siphon tap and gently warmed, with stirring to drive off excess of gas, there will result a thick acid fluid, thicker than milk, though an equally good emulsion; and, coagulation having already taken place in the bottle, the addition of pepsin (which dissolves more readily than in the previous experiments)

causes no further precipitation, the casein being in an almost gelatinous condition.

It seems probable, therefore, that the indigestion and nausea so often produced in cases where a milk diet is desirable are the result of the coagulation of the milk—a coagulation which may be delayed by the addition of alkalies; and it is further probable that koumiss is retained by the stomach, in preference to milk, for the following reasons: 1st, that coagulation has already taken place; 2d, that the precipitated casein—the nourishing constituent—is in a very fine, almost gelatinous condition; 3d, that carbonic acid is present in the free state and exerts a sedative action; and 4th, that free lactic acid still further stimulates and aids digestion.

Cinchona in Colombia.

In a work just published by Dr. Alfred Hettner, giving an account of his travels in the Andes of Colombia,* the author reports that the plantations of cinchona which have been started during the last few years are making satisfactory progress. The first attempts to raise cinchonas by cultivation were made in various localities, for instance, in the hacienda "Columbia," east of Purification, but the first systematic plantation was started by Germans at the hacienda "Alexandria," located at an hour's distance south of Los Manzanos, at the upper end of a valley, having a southern trend, and situated about 2,600 m. (ab. 8,000 ft.) over the sea-level. Dr. Hettner, who had been invited by Mr. Paul Heckel, the manager of the plantation, visited the latter several times, and found it to make a decided and continued progress. While it is confidently expected that Colombia will have ample supplies of cinchona bark, the natural source of which had almost been exhausted, it is doubtful whether the country will be able, in the future, to compete with the East Indian plantations, owing to the difficulty of getting the bark to the sea shore.

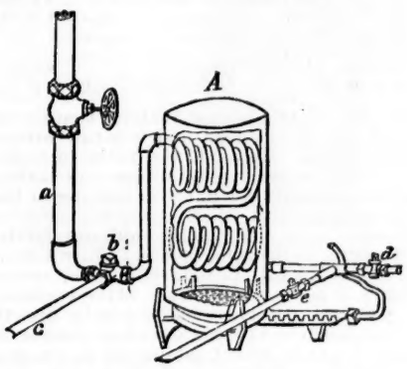
It will be remembered what excitement was caused in the bark-trade by the appearance of the so-called cuprea bark, derived from a tree closely allied to cinchona, growing in the forests to the west of Buccaramanga and Vélez, the former being situated about 175 miles NNE., and the latter about 100 miles N. of Bogotá. About 60 miles ESE. of Bogotá lies Villavicencio, which was only a poor hamlet some years ago, but has blossomed out into an important trading place. It acquired some notoriety shortly after the cuprea bark had been discovered, by the fact that considerable forests situated near the place were regarded as consisting of the same kind of trees (species of Remijia) which yielded the cuprea bark at the other places. A speculative fever at once seized upon a number of merchants of Villavicencio and Bogotá, who bought up quantities of the bark, and sent it to Europe. Some German firms, or their representatives, however, were more cautious, and subjected the bark to an analysis, when it turned out to contain only minimal amounts of quinine.

The "cuprea" tree, which is found in various localities of the Cerro de la Paz, had always been regarded as valueless, until a peon drew the attention of a German merchant, Mr. Lengerke, to its bitter taste. The latter sent samples of it to Europe, where it was at once found to contain paying quantities of quinine. At first he carried on the collection of the bark as secretly as possible, but the secret soon leaked out, and in consequence of it, Buccaramanga was seized by a perfect whirlwind of speculation. All sorts of levers were set in motion—even dishonest ones—to secure forest land where cuprea trees were reported to occur, and open warfare was waged in the forests between the peons working for different firms. The robbing system soon brought its own punishment. All easily accessible cuprea forests having been exhausted, and the market being unfavorable to the employment of this kind of bark on the part of the manufacturer, the business died out.

Strophantin and Ouabain.

Not long since, M. Arnaud announced to the Academy of Sciences that he had discovered a poisonous glucoside in the wood of an apocynaceous tree, called in the Somali country (Eastern Africa) Ouabaïo or Ouabayio. The natives use it to poison their arrows by simply extracting the wood with water, and evaporating the decoction to the proper thickness. On game the poison acts very much like strophanthus preparations, the wounded animal showing at first no apparent uneasiness, but after a short time dropping down suddenly paralyzed. A log of the wood in question was recently brought to Paris, and yielded to M. Arnaud a glucoside which he found to have the formula $C_{30}H_{46}O_{12}$, while $C_{31}H_{46}O_{12}$ proved to be that of strophantin. Owing to the great resemblance of the two glucosides, it was thought interesting to ascertain how their physiological effects would compare together. The investigation was undertaken by MM. E. Gley and P. Rondeau, and its first results have been communicated by M. Gley to the Academy. On the whole, ouabaïn and strophantin have been found to have very similar properties, both acting as heart-paralyzers with like symptoms. But without entering into the particulars of the experiments, the main difference, if not the only one, is that ouabaïn will cause death more rapidly and in smaller doses than strophantin will, whether administered hypodermically or given through the stomach. For instance, the lowest deadly hypodermic dose of ouabaïn for guinea-pigs was found to be on an average one-tenth of a milligramme for each one kilogramme weight of the animal and twenty-five minutes' time to be necessary. With strophantin one-fifth of a milligramme and fifty minutes were requisite to the same effect. With dogs the proportions, both as regards deadly dose and speedy death, were slightly less in favor of ouabaïn, and still less with rabbits. But at the lowest estimate ouabaïn may be considered to be, on an average, twice as powerful hypodermically. When given through the stomach both poisons are much less dangerous, as dogs were made very sick, but not killed, with doses twenty-five times as large of ouabaïn, and over one hundred times of strophantin. A remarkable feature about the new toxic substance is that, while poisonous barks, seeds, and leaves are known in great number and variety, poisonous woods are seldom spoken of.—*Chem. and Drugg.*

* "Reisen in den columbianischen Anden." Von Dr. Alfred Hettner. 8vo. Leipzig, 1888.



A LABORATORY APPARATUS FOR SUPERHEATING STEAM.

The superheater consists of half-inch copper tubing wound to a double spiral. For avoiding loss of heat by radiation, it is surrounded with a copper jacket well covered with asbestos. The whole is placed over a Fletcher burner. To start the apparatus, the three-way tap *b* is turned so that the condensed water in the steam-pipe *a* escapes through *c*. The tap *d*, which allows the superheated steam to pass on to its ultimate destination, is meanwhile closed, whereas *e* is open. As soon as the steam-pipe *a* delivers dry steam, it is allowed to enter the apparatus, and the burner is lit. The steam in the mean time escapes through *e*. The latter is closed and *d* opened when the steam has reached the temperature required. —*Chem. Zeit.* and *J. Soc. Chem. Ind.*

Solvents of Morphine.

Mr. A. H. Allen throws doubt on Dieterich's statement that morphine is soluble in amyl alcohol in the proportion of 1 part in 1,300, in acetic ether 1 in 1,665, and in ordinary ether 1 in 1,250. These figures do not at all agree with ordinarily accepted statements, for they show that morphine is more soluble in ordinary ether than in acetic ether or amyl alcohol, which are solvents largely employed in preference to ether for extracting morphine from its solutions. Dieterich further states that morphine is soluble in 7,000 parts of cold methyl alcohol, and in 1,660 parts of ethyl alcohol. This great difference of solvent power suggested to Mr. Allen the possibility of using methyl alcohol in opium assay according to the process of the German Pharmacopœia, as this alteration might materially diminish the error due to solubility of morphine. But on putting the matter to test, Mr. Allen found that morphine was very readily soluble in methyl alcohol, so that it would be hopeless to make the substitution suggested. Dieterich also states that morphine sulphate is "very soluble" in ether, whereas Mr. Allen finds the solubility to be 1 in 82,000, and when the ether has been previously washed free from traces of alcohol, and then dehydrated by means of potassium carbonate followed by distillation, the solubility of morphine sulphate is almost infinitesimal. Thus the residue of morphine sulphate from 50 C.c. of dry ether free from alcohol was only 0.0002 gramme, corresponding to a solubility of 1 gramme of the salt in 162,000 grammes, or 225,000 C.c.

Salicylate of Sodium in Toothache.

A German physician recommends salicylate of sodium, in doses of 10 grains, every half-hour, as an internal remedy for toothache. It has been found effective both in rheumatic toothache and in caries or periosteal inflammation. Though its effect is not lasting, it is nevertheless capable of alleviating or removing the pain for one or several days.—*Zeitschr. Oest. Ap. Ver.*

New Formulæ from the Unofficial Formulary B. P. C., 1888.

THE Committee on Unofficial Formulary of the British Pharmaceutical Conference, at the late meeting of the society at Bath, presented a series of 20 new formulæ to be incorporated with those previously reported. Among them are some which bear the same title, or practically the same, as certain preparations of our National Formulary, and are intended for the same purposes. We therefore need not quote them here. Among the remainder, the following may be found of service to some of our readers. We have recalculated all formulæ, where it appeared necessary, into the U. S. weights and measures. In the formula for Emulsion of Cod-Liver Oil, the difference would have been insignificant. Hence, the original proportions may be transferred without change to U. S. terms:

1. *Emulsio Olei Morrhuæ.*

Cod-Liver Oil	8 fl. oz.
The Yolk of 2 Eggs,	
Tragacanth, powdered	16 grains
Elixir of Saccharin	1 fl. drchm.
Tincture of Benzoin	1 " "
Spirit of Chloroform	4 " "
Oil of Bitter Almonds, essent.	8 min.
Distilled Water	enough to make 16 fl. oz.

Measure 5 fl. oz. of Distilled Water, place the powdered Tragacanth in a dry mortar, and triturate with a little of the Cod-Liver Oil. Then add the Yolks of Eggs and stir briskly, adding water as the mixture thickens. When of a suitable consistence, add the remainder of the oil and water alternately, with constant stiring, avoiding frothing. Transfer to a pint bottle, add the Elixir of Saccharin, Tincture of Benzoin, Spirit of Chloroform, and Oil of Almonds, previously mixed, shake well, and add Distilled Water, if necessary, to make 16 fluidounces.

The "Elixir of Saccharin" is made by dissolving 384 grains of saccharin an 1 192 grains of bicarbonate of sodium in about 8 fl. oz. of water, adding 2¼ fl. oz. of Alcohol, filtering, and then adding enough Water to make 16 fluidounces.

Each fluidrachm of this Elixir contains 3 grains of Saccharin. (The Liquor Saccharini of the *Nat. Form.* contains 4 grains in a fluidrachm.)

2. *Syrupus Codeinæ.*

Codeine	16 grains
Diluted Alcohol	5 fluidrachms
Distilled Water	5 "
Syrup	enough to make 16 fluidounces

3. *Syrupus Ferri et Quininæ Hydrobromatum.*

(*Syn.* Syrupus Ferri Bromidi cum Quinina.)

Acid Hydrobromate of Quinine	128 grs.
Diluted Hydrobromic Acid	368 min.
Syrup of Bromide of Iron (U. S.)	8 fl. oz.
Distilled Water	enough to make 16 fl. oz.

Mix the Diluted Hydrobromic Acid with 1 fluidounce of Distilled Water, dissolve in the mixture the Quinine salt, and add enough Distilled Water to make 8 fluidounces. Then add the Syrup of Bromide of Iron.

Each fluidrachm contains 1 grain of acid hydrobromate of quinine and about 4 grains of bromide of iron.

[In transcalculating the original formula, so as to produce the strength here indicated, a proportionate amount of the Syrup of Bromide of Iron of the U. S. Ph. was directed to be used.]

4. *Syrupus Ferri, Quininæ et Strychninæ Hydrobromatum.*

(*Syn.* Syrupus Ferri Bromidi cum Quinina et Strychnina.)

This is prepared like the preceding, with the addition of 2 grains of Strychnine, so that the product contains $\frac{1}{64}$ grain of strychnine, 1 grain of acid hydrobromate of quinine, and about 4 grains of bromide of iron.

5. *Tinctura Phosphori Composita.*

Compound Tincture of Phosphorus.

Phosphorus	8 grains
Chloroform	800 min.
Alcohol	enough to make 10 fl. oz. (U. S.)

Place the Phosphorus in a stoppered bottle, and apply the heat of a water-bath until dissolved. Then add the solution to enough Alcohol to make 10 fl. oz. Shake well. This tincture should be protected from the light, in accurately stoppered bottles.

Each fluidrachm contains $\frac{1}{10}$ grain of Phosphorus.

6. *Unguentum Oleoresinæ Capsici.*

Oleoresin of Capsicum (U. S.)	1 oz.
Yellow Wax	5 "
Benzoinated Lard	4 "

Melt the Lard and Wax at a low temperature, add the oleoresin, mix thoroughly, and, if necessary, strain through muslin. Stir until cold.

Cements and Pastes.

IN his "Pharmaceutisches Manual," Eugene Dieterich gives the following formulæ:

1. Cement for Porcelain, Marble, Alabaster, Glass, etc.

a. Caustic Lime	10 parts.
White of egg, fresh	25 "
Plaster of Paris	55 "
Water	10 "

Reduce the Caustic Lime to powder, and triturate it with the White of Egg to a uniform paste. Dilute this with the water, quickly incorporate the Plaster of Paris, and use the cement at once.

[The materials to be cemented must be ready at hand. The broken surfaces should be dampened with water so that the cement will at once adhere. The pieces must be firmly pressed together and kept in this position for about twelve hours.]

b. Casein, fresh	100 parts.
Silicate of Sodium, syrupy	q. s.

Mix the Casein in a mortar with enough Silicate of Sodium to produce a uniform honey-like mass.

This cement is transparent and keeps for some time. It is not water-proof.

2. For Meerschaum.

Use the casein cement described under 1, *b*, with the addition of five parts of calcined magnesia for 100 parts of casein.

3. For Paper, Woven Fabrics, Leather, etc.

Borax	5 parts.
Water	95 "
Casein	q. s.

Dissolve the Borax in the water and incorporate enough Casein to produce a honey-like mass.

4. For Horses' Hoofs.

Ammoniac, purified	30 parts.
Turpentine (oleoresin)	10 "
Guttapercha	60 "

Melt the first two ingredients in a steam-bath and gradually add, while stirring, the Guttapercha. For use, soften the mass in hot water and then press it into the previously clean hoof-fissure. The cement may be colored black by incorporating about 2 parts of lamp-black.

5. For cementing Leather Belts, Leather upon Wood or Metal, etc.

Guttapercha	20 parts.
Bisulphide of Carbon	50 "
Oil of Turpentine	10 "
Asphalt (Syrian), powd.	20 "

Dissolve the Guttapercha as far as possible in the mixed liquids, then add the Asphalt. After several days' standing the mass will be homogeneous. Should it be too thin, evaporate it somewhat so that it may be of the consistence of honey when cold.

Before applying this cement to leather, the latter must be deprived of fat by means of benzin, upon the side to be cemented.

6. For tightening Iron Vessels.

Iron Filings	85 parts.
Sublimed Sulphur	10 "
Chloride of Ammonium, powd.	5 "
Water	q. s.

Mix the solids and make a thick mass with water. Apply this to the fracture, previously cleaned by scraping. After standing eight days the cement will be as hard as iron, and will resist boiling. It is very serviceable for tightening steam-apparatus with leaky bolts.

7. Cement for coating Boiler-Coverings, etc.

Litharge	85 parts.
Boiled Linseed Oil	15 "

Triturate them in a warmed mortar until a plastic mass results.

8. Cement for Retorts, etc.

Clay, powd. and sifted	60 parts.
Rye Flour	30 "
Bran	10 "

Mix them well. When wanted, take a sufficient quantity and mix it with water to a dough to be applied to the retort or flask.

9. Paste for affixing Paper to Tin.

Mucilage of Acacia	95 parts.
Glycerin	5 "

The tin must be cleaned before the label is pasted on.

A CONSTANT GAS GENERATOR.

1. *Evolution of Hydrogen.*

THE apparatus used is that shown in the cut. About one and a half kilos of sheet zinc in pieces, about 1 sq. Cm. in area, are placed in the annular space *A*, and hydrochloric or sulphuric acid of about five times normal strength, containing 10 C.c. cobalt chloride sol. per liter, is allowed to flow on to it from the globular funnel *B*, by turning the cocks *C* and *D* and the stopper *E*, so as to permit the transference of the expelled gas from the lower vessel to the upper by means of the tube *F* (after the manner of a percolator).

The tube of the stopper *E* being prolonged nearly to the bottom of the funnel, serves to maintain a constant head, acting on the principle of Marriotte's bottle, which, indeed, may be substituted for it when the apparatus is to be used continuously for a long period.

The U-tube *G*, filled with mercury, is designed to allow the escape of any small quantity of gas evolved after cutting off the supply of acid, if the cock on the exit tube *H* should happen to be closed.

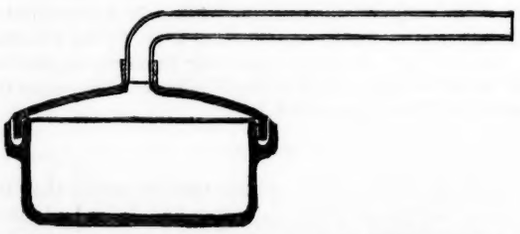
The solution of the zinc salt, as it forms, passes through the holes in the inner tube *K*, and rises gradually to a level with the upper end of the tube *L*, down which it flows into the base of the apparatus. By this means, the partly exhausted acid is kept in contact with the zinc until it is almost completely saturated, while at the same time the evolution of gas does not slacken, because of the continual dripping of fresh acid from the funnel.

The function of the adjunct marked *M* is merely to distribute the acid on each side of the inner tube. The object of the two stop-cocks (*C* and *D*) is to allow of one of them being left in the position that has been found to give the right flow of acid for any particular work, while the other can be closed when it is desired to stop the evolution of gas for a time.

With this apparatus a very nearly constant pressure of gas is maintained, the maximum variation of a series of 11 experiments being equal to a column of water 2.5 Cm. in height.

2. *Evolution of Oxygen.*

All that is necessary is a thin copper flask to contain the oxygen mixture (potassium chlorate with 0.1 per cent of ferric oxide), a burner with a gauze cap to prevent its catching back, and an arrangement like an ordinary thermostat (attached to the delivery tube), which is set at the desired pressure, so that on its being exceeded, the gas supply is diminished, returning to its original magnitude on the pressure falling again.—*Chem. Zeit.* and *J. Soc. Chem. Ind.*



A SAFETY RETORT FOR GAS GENERATION.

N. VON KLOBUKOW recommends the form of retort to be presently described, whenever gases are to be prepared which are liable, under certain circumstances, to become dangerous to the operator. As will be seen from the cut, the lid fits into a flange around the edge of the retort. All parts are made of malleable iron. The joint is made tight by filling the flange with a mixture of 100 parts of sand (of medium fineness) and 50 to 60 parts of plaster of Paris made into a thick paste with water, and then pressing the lid into the mass in the flange. In about 15 minutes, the retort may be heated.

The mass just described furnishes a very good cement, which does not crack, resists the passage of gases for some time (about 6 hours, certainly), and at the same time easily gives way, should there be a sudden high pressure developed within the retort. Even if the lid should be completely thrown or projected upwards, no damage from flying fragments can result.

To loosen the lid, it is only necessary to tap the flange lightly with a hammer.

If desired, the lid may be provided with an inlet, so that the retort may be periodically refilled, when the current of generated gas becomes weaker.—*Zeitsch. f. Anal. Chem.*, 1888, 467.

THE "FUMIFIER."

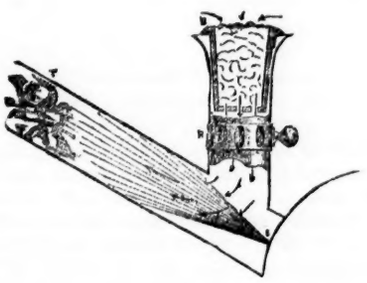
DR. ROBERT J. LEE describes, in *The Lancet* for May 19th, an apparatus of somewhat novel construction for producing fumes for remedial and disinfecting purposes, which consists of a steam generator (Fig. 1) with

FIG. 1.

Lee's fumifier.

an attachment shown in diagram in Fig. 2. The action of the current of steam, escaping from the small aperture in the steam generator, causes a current of air in the tube T, in the direction of the arrows, and any substance placed in the bowl B and ignited is subjected to a downward draft. By means of a damper-ring R, which opens or

FIG. 2.



closes a series of holes in the upright tube, the force of the draft through the bowl B may be regulated. In the case of vegetable substances capable of ignition—such as tobacco, stramonium, etc., no considerable previous preparation is required ; but opium, arsenic, calomel, etc., may be combined with charcoal as in the case of pastilles.

Dangers of Paraldehyde.

PARALDEHYDE is by no means so innocent a hypnotic as it has been frequently reported. On the contrary, it should be used, according to Froehner (*Apoth. Zeit.*) with great care. In animals living chiefly upon vegetable diet, it attacks particularly the red blood-corpuscles. Under its reducing action, the blood becomes as seriously affected (by methæmoglobin-anæmia) as by chlorate of potassium, pyrogallic acid, or nitrobenzol. In addition, it has a poisonous effect upon the nervous centres.—After *Rundschau* (Prag).

Artificially Dyed Moss, etc.

ACCORDING to W. Braunsdorf (in *Neueste Erfind. und Erfahr.*), moss and other vegetable structures may be dyed a fine green color in the following manner: Dissolve 3½ av. oz. of ferric chloride and 7 av. oz. of acetate of lead in 4½ gallons of hot water, and immerse the moss, etc., in this liquid for about one minute. Then remove it, drain and partly dry it, and immerse it in a hot solution of 770 grains of chromate of potassium, and 1,160 grains of ferrocyanide of potassium. Remove the excess of coloring liquid by gentle pressure between boards, spread it out on wood to dry somewhat, and finish the drying by hanging it up in an airy, but dark and warm chamber.

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EDITORIAL.

NOTES OF THE MEETING.

Again we have to record the close of another of one of those delightful reunions of druggists from the different sections of the country. The meetings of the American Pharmaceutical Association have grown to be of great interest and pleasure to all who participate in them, and each year as we adjourn and bid good-by to those we have met, the feeling is that it has been one of the most delightful meetings we have ever attended. The one this year is no exception to the rule, for if ever any city tried to make the Association feel at home and provide enjoyment for it, Detroit bids fair to outrank them all. The beauty of the city with its fine broad streets, most of which are lined with magnificent trees, and the houses of an architecture so different from the routine flat-fronts of our eastern cities, where one can hardly tell his house from his neighbor's, favorably impressed the senses and made us feel we were in a place where comfort and pleasure are thought as much of as the accumulation of wealth. The attentiveness of the local druggists was remarkably displayed on many occasions. No care was spared to see that each want was attended to, and the trouble they took that this should be done was deserving of many thanks. The entertainments given were marked by an absence of formality which rendered them very enjoyable.

The meeting was well attended, and each session had more than enough present to enter into the discussions and render them interesting.

The section on commercial interest, contrary to general expectation, drew out a large crowd, and though one evening session was prolonged until eleven o'clock, the members remained and were interested to the end.

The attendance on the section on scientific papers belied the statement made in former years that but very few were interested in the papers, or that the only reason members attended the meeting was for the entertainments, for at each of its sessions, and there were three, a large proportion of members were present, either as interested spectators or participants.

Pharmaceutical legislation and pharmaceutical education were not forgotten, and the working of the new plan, of dividing the work into sections, showed the wisdom of the Association in adopting it. A few years ago, no one knew when any particular business was to be considered, and it was in the power of a person antagonistic to any measure to bring up enough business of another nature to crowd out what he disliked. As it is now, there are times for all things and reasonable opportunity for having all measures carefully considered. It would be impossible to go back to the old method, for no one wants it.

The papers furnished seemed to be a little above the average of past years, and show that the Association is not deteriorating in its scientific work.

It was pleasant to see most of the old work horses of the association on hand, but the faces of a few who have passed over the border-land were missed.

Wednesday night the reception at the Armory was well attended by young and old.

Thursday night at the Opera House was passed very pleasantly; the singing and dancing of the ballet being enlivened by the witticisms of the comedian on polka-dot neckties and other things.

The trip up the river and on Lake St. Clair, though made unpleasant for a few by the storm and consequent rolling of the boat, was thoroughly enjoyed. A mistake was made by most of the party of partaking too freely of the generous hospitality of Parke, Davis & Co., for after passing through their immense establishment and watching their process of manufacturing and gelatin-coating pills, a hearty and elaborate lunch was provided on the lawn, which seemed to meet the favor of all, but which spoiled the appetite for the banquet provided by the committee on entertainment on Star Island.

On the return to Detroit the company were entertained by music and by responses to toasts. Mr. M. W. Alexander, the President, responding to the toast, "American Pharmaceutical Association;" Mr. Geo. J. Seabury, to "Where and why should we meet?" T. P. Cook, of Pennsylvania, to "Pharmaceutical Exhibits;" Dr. J. E. Clark, Detroit, to the "Michigan State Pharmaceutical Association," and S. A. D. Sheppard, to "Pharmaceutical Education," and volunteer toasts by other gentlemen.

The badge furnished at this meeting was a miniature pill tile, made of celluloid with the letters on the back, A. P. A. and M. P. A.; the latter meaning the Michigan State Pharmacy Association, which meeting was held at the same time. On the front was the division into twenty-four parts, usually seen on pill tiles, and below that a number, a different one for each person. There was also a little directory printed and furnished with the names of every person present and the corresponding number on his pill tile. This was very convenient; for, in travelling around the city, when one of these little pill tiles was seen, by looking at the number and referring to the directory, one could tell at once who the owner of it was.

Prof. Painter, of New York, is a very happy man, for besides being honored by an election to the council, and also as chairman of the scientific section, he has succeeded in at last persuading the Association to go to San Francisco; so next year we may expect our brethren on the Pacific slope to exert their utmost endeavors to make the meeting of 1889 a memorable one.

THE recent observations, which tend to prove that the true nature of cholera infantum and, indeed, of many other disturbances of the digestive apparatus, instead of being inflammatory, is really a condition of poisoning, are of great interest to pharmacists from a purely business point of view. Taking, for example, the summer cholera of infants, the presumption has been, until lately, that it is an inflammation—entero-colitis—and the efforts of physicians to arrest its progress have been chiefly based upon this presumption; hence the multiplicity of mixtures containing opiates, antacids, and astringents. According to the new light thrown upon this malady, it becomes apparent that it is caused by poisonous substances commonly developed in the food supplied to infants artificially fed, and caused by atmospheric germs. Insanitary surroundings and high temperature serve only as conditions favoring the development of bacteria, and when the latter gain access to the alimentary canal, they interfere with normal digestion, and by their growth give rise to leucomaines, which are a cause of acute poisoning. The watery movements from the bowel are the result of the effort on the part of the system to get rid of the poison, and little is to be gained by locking up these irritating products in the in-

testine. The rational treatment consists in removing the contaminated contents of the bowel, arresting the further development of bacteria, and securing a pure food supply for the future.

This change in the mode of treatment affects the pharmacist, in so far as it diminishes the demand for mixtures and abbreviates the duration of treatment. Indeed, with proper precautions regarding the purity of the food supplied for young infants, it does away with much of the need for medicines at all.

Fortunately the new condition of things offers the wide-awake pharmacist a source of profit which may, in a measure, at least, replace the loss in business which he will otherwise suffer, and that is the sale of properly sterilized milk. The method at present in favor for insuring the freedom of milk from disease germs is the subjection of it in closed vessels to a temperature of 260° F. It is found that, when thus treated, cow's milk becomes not only aseptic, but the effect of this degree of heat is to render it more easy of digestion. The casein, instead of forming a hard curd, with difficulty soluble in the intestinal secretions of the infant, forms flocculent curds, more nearly resembling those which are characteristic of human milk.

Now, the trouble involved in the proper treatment of cow's milk to secure a proper condition must often interfere with its use if it is to be carried out in every family where infants have to be fed artificially. On the other hand, no one so intimately connected with the supplying of household needs is as capable of undertaking this work as an intelligent pharmacist. Provided with a Papin's digestor, or other efficient apparatus, he can easily supply all the demands of his neighborhood; for milk thus prepared and preserved in closely stoppered bottles can be kept for many days unchanged, and he runs little risk of loss on unused stock. The convenience of being able at all times to procure properly sterilized milk without having to prepare it day by day in the house will render the majority of people willing to pay a reasonable price for it, providing pharmacists undertake the business before the public have been educated to do it for themselves, and the apparatus has become generally introduced.

In view of the prevailing tendency to encourage systematic education of pharmacists in pharmaceutical colleges in place of that formerly in vogue, and the disposition on the part of framers of laws regulating the practice of pharmacy to accept the possession of a diploma of a pharmaceutical college as evidence of fitness in lieu of an examination of the candidate, it seems proper to call attention to the condition of affairs which has grown up in the medical profession of this country. For many years it was almost invariably the custom to make the possession of a medical degree a license to practise, and any person holding a medical diploma was, so far as the legal requirements were concerned, enabled to practise medicine in nearly every State of the Union. It was not long, however, before it became apparent to some that the *manufacture* of degrees and their advertisement and sale for a purely pecuniary consideration might become a profitable undertaking; and some parts of the country were flooded with such diplomas, and many persons obtained them without having acquired even a smattering of medical education.

We have no reason to believe that there exist, as yet, any bogus pharmaceutical schools among us; the few colleges already in existence, like the earlier medical colleges, being reputably conducted and their diplamas being obtainable only after the candidate has presented evidence of fitness; but given the same conditions as those which existed formerly in the case of the medical profession, and we will have such bogus diploma mills organized among us, and the reputable pharmacist and the public will correspondingly suffer. If, on the other hand, pharmacy boards will only accept the results of examination by themselves or by similarly organized boards as evidence of qualification, pharmaceutical schools will then be stimulated to secure efficient instructors, to improve their methods, and increase the percentage of students who succeed in passing the licensing boards. The established schools will be protected from ruinous competition, and the standard of requirements will be kept up to a creditable limit. Students will resort to schools for education in pharmacy because the facilities offered for instruction will enable them to acquire with greater ease and rapidity the knowledge which is requisite to obtain a license to do business.

The medical profession of this country is now endeavoring to secure reform in this matter, but finds much opposition in the existence of so many medical colleges having a low grade of requirements, and it is only in a few localities that local laws have enabled the reformers to make headway against vested rights and conflicting interests.

It is to be hoped that pharmacists will take advantage of the experience of the past, and avoid the condition which will surely produce similar results.

We are informed that the Committee of Revision and Publication of the U. S. Pharmacopœia will shortly issue to the bodies entitled to send delegates to the next convention a pamphlet containing the criticisms of importance which have been made upon the Pharmacopœia as it exists at present. We hardly need to remark upon the benefit to be derived from a careful study of these comments by those who are to participate in the Convention of 1890, or the importance of such a publication as affecting the labors of the next Committee on Revision.

A number of queries and several Society reports which have been crowded out from this number of the American Druggist will appear in our next issue.

CORRESPONDENCE.

American Druggist:

Replying to inquiry of A. W. S., Pomeroy, O., I have to say that a medical diploma is necessary in Washington Territory. The law provides that a copy of diploma be filed with the county auditor, and the party desiring to practise must register at the same time. Æ. McM.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 2,234.—**Liquid Carbonic Acid Apparatus.**

We do not know any firm that makes a specialty of apparatus for making *liquid* carbonic acid gas. For this purpose, a compressor or pump is necessary which must be constructed with great nicety. We have no doubt, however, that, if you will consult any of the leading manufacturers of soda-water apparatus, they will put you in communication with firms who can supply what is wanted.

No. 2,235.—**Cleaning Sponges** (J. E. L.).

We are asked to give a method of "cleansing sponges of the sand and white particles that are found in them."

On a small scale, the only efficient way to deprive sponges of sand, is to beat them well, with a stick or mallet, and to shake out the loosened particles of sand. The "white particles," or any red core, or large incrustations can only be removed by tearing or cutting out.

On a larger scale, sponges may run between crushing rollers, then through agitators, and centrifugal machines to remove sand or any other foreign particles that can be dislodged by concussion and agitation. The deeper-seated particles, however, are liable to remain under any circumstances. If the sponge is rendered antiseptic, these can do no harm.

No. 2,236.—**Removing Air-bubbles from Ointments** (C. W.).

This correspondent writes: "Can you suggest anything better than the heating process to remove air-bubbles from an ointment of vaseline which has been thoroughly agitated in compounding?"

We are sorry to say that we can suggest nothing better. If the vehicle inclosing the air were more liquid and mobile, we might suggest an aspirator or air-pump, but this would probably be insufficient to cause the escape of air-bubbles from an ointment. If it were in thin layers, however, the air may possibly be extracted in this manner.

No. 2,237.—**Swedish Matches** (McC. and W.).

The improved Safety Matches or Swedish Matches were invented and introduced by Lundstrom of Jönköping, Sweden, under a patent. The improvement consisted in

dividing the ingredients so that neither portion could ignite by friction, without coming in contact with the other. One of these portions is applied to the ends of the matches, and consists of the following substances: chlorate of potassium 6 parts, sulphide of antimony 2 to 3 parts, glue 1 part. The glue, of course, must be dissolved and the other ingredients added. The wood of the matches also requires a previous treatment, which varies in different factories. A good plan is to impregnate it with a dilute solution of paraffin, after it has been thoroughly dried. The second portion of the explosive mixture is prepared from: amorphous or red phosphorus 10 parts, sulphide of antimony or binoxide of manganese 8 parts, glue 3 to 6 parts. This mixture (the glue being dissolved) is applied to the friction surface, which had previously been roughened by a coating of glue and sand.

No. 2,238.—**Coloring Matter in Pharmaceutical Preparations** (Wheeling).

This subscriber asks whether we think it justifiable to add any coloring matter to pharmaceutical (that is, medicinal) preparations, referring particularly to such coloring agents as "tincture of cudbear, solution of carmine, or the tincture of compound cudbear of the National Formulary.

In reply we have to say, that a purposeless addition of coloring matter would certainly be unjustifiable. But when a special object is to be attained, provided no fraud is intended, and the coloring matter is harmless, we do not see what objection can be raised. The addition of red coloring matter to white wine, to make it pass for genuine red wine, would, of course, be a fraud. But in legitimate pharmacy, there are many cases where coloring matters are useful and advisable. In some cases preparations are colored, because it is desired to distinguish them from others, with which they might be confounded. Take the case of Fowler's solution, for instance. This is not only colored, but also flavored by the addition of Compound Tincture of Lavender, to prevent the solution, which would otherwise be colorless and tasteless, to be mistaken for an innocent solution. Elixir of Valerianate of Strychnine is directed by the N. F. to be colored with Compound Tincture of Cudbear, because the preparation, as heretofore made by manufacturers, was always colored, and it would have caused confusion to propose a new formula producing a colorless product. Compound Syrup of the Phosphates has always been colored either with cochineal or with cudbear. Why depart from this custom, when the public is accustomed to it in that condition? Compound Elixir of Quinine (N. F.) is directed to be colored, if so desired, by the addition of Compound Tincture of Cudbear, not because it is intended that the purchaser shall be deceived as if the preparation had been made from cinchona bark, but because the elixir may have to be added, in place of Elixir of Cinchona (for which it is a perfectly legitimate substitute, as it can only be regarded as a vehicle, and not as a medicine), when the latter is not at hand, and a different color would be imparted to the product if the elixir had been left colorless. It is all very well to stand up for pure medicines. We are as much in favor of purity and standard strength, perhaps more so, than others. But we must not forget that the patient or consumer who has to take the preparations has his whims and peculiarities, and that it is often necessary to disguise disagreeable features, or to afford him protection against mistakes from dangerous preparations by some outward sign, one of which is coloring matter judiciously applied.

No .2,239.—**Solution of Gun-Cotton; its Nature** (U. H.).

Our correspondent asks why it is that films of different degrees of toughness are obtained by evaporating collodions made from different kinds of gun-cotton, particularly such as are made from long and short-fibred cotton.

This is a simple question to ask, but not easy to answer. We have frequently speculated on the subject, and are surprised that it seems not to have been discussed in professional literature. In fact, at this moment we cannot recall any publication where the particular point to which our correspondent's question leads has been alluded to.

In the first place, it will be accepted as a fact, verified by all practical photographers and many others who have worked with gun-cotton and collodion, that the nature of the film (obtained by allowing a solution of gun cotton to evaporate) varies very much—as to toughness, firmness, and cohesion—not only according to the kind and quality of the cotton used, but also according to the treatment. A *short-fibred cotton* will always yield a weak and brittle film, even when it has been converted into gun-cotton at low temperature and with an acid of just sufficient strength. Elevation of temperature, prolonged chemical action, and very strong acids will render the resulting gun-cotton almost useless for technical purposes. In the case of a *long-fibred* cotton, such as that known as "Sea-Island," a cautious treatment, a low temperature, with acids of just proper strength, and carefully regulated as to time, results in the production of a film which is remarkable for its toughness, and which, when torn, very much resembles a woven fabric, or rather fine paper, with the fibres interwoven and crossed in every direction. Any overstepping of the limits above outlined will produce an inferior product, and when the treatment is carried to excess, the result will be just as bad as that obtained from short-fibred cotton under similar circumstances.

Now, it is well known that chemical compounds of definite composition and capable of crystallization may be obtained by concentration or evaporation of their solutions, and that they will, under proper management, always appear in their original forms, although we must suppose that, while they were in solution, the original crystals were disintegrated down to the crystalline or to the chemical molecules.

While it is, however, easy to account for there appearance, in a *crystalline* shape of a dissolved *chemical compound*, it is not easy to understand how a vegetable fibre or cell could be first *dissolved* and afterwards be *reformed*, so as to resemble or equal the original fibre in physical properties. We can find no explanation for this; nor have we ever heard one offered by anybody else. But there seems to us to be a way out of the difficulty. *Is it absolutely certain and proven that the whole of the gun-cotton fibre is actually in perfect solution?* Is it not possible that, having been modified in structure and chemical composition by the treatment it has undergone, a certain portion or small skeleton of it is left undissolved and is rendered perfectly transparent and invisible by the action of ether-alcohol? It will be remembered that a comparatively small quantity of gun-cotton will render a considerable amount of ether-alcohol *viscid*. And it is known that different brands of collodion, though made with precisely like quantities of gun-cotton (of different origin), are apt to differ considerably in their degree of viscosity. It is hard to account for this, if we assume that the gun-cotton is in perfect solution, unless we assume a more complex reaction during the conversion of pure cotton fibre into gun-cotton resulting in different proportions of products according as longer or shorter fibres are operated on.

We are not prepared, at this time, to do more than to throw out the suggestion that there is apparently some physical cause inherent in the fibres, as we would otherwise be hardly able to account for the differences observed in the collodion films. On the other hand, we encounter facts which appear to be positive proofs that collodion is a perfect solution, chief of which is the fact that even perfectly clear collodion may be filtered through paper, cotton, or other porous material, without appearing to lose its viscosity.

No. 2,240.—**Reaction between Camphor and Salol** (L. F., New York).

This correspondent writes: "I recently received a prescription for powders in which, among other ingredients, there was salol and camphor. The others were acetate of lead, Dover's powder, and sugar. On mixing them together, the powder became moist, and a little while afterwards wet. On investigating the cause, I found it was due to the camphor and salol. When these are brought together, they liquefy the same as chloral and camphor. On addition of water, a heavy, oily-looking liquid separates and remains on the bottom. Alcohol dissolves this to a clear solution. When water is added to the alcoholic solution, it becomes white, and small drops of oil appear on the side of the vessel and on top. I have not come across any article on this subject in the current literature. Will you kindly explain the reaction?"

It is known that chloral hydrate, when brought in intimate contact (by trituration, etc.) with certain bodies, such as camphor, menthol, or with phenols, such as carbolic acid, thymol, etc., brings about a liquid product, if the two substances are in suitable proportion. On the other hand, camphor, when brought in contact with some of these phenols, results in the same kind of product, though more rapidly and energetically in some cases than in others.

In the former case we have a compound of chloral-camphor, chloral-menthol, chloral-phenol, etc.; and in the second case, a compound of camphor-menthol, camphor-phenol, camphor-thymol, etc., etc.

The precise nature of these compounds has not been made out. It is assumed that the physical change, and other changes in properties, show the formation of a definite chemical compound. If this is so, then it may be further assumed that this new compound is a liquid at or, dinary temperatures, and that it possesses great solvent powers, as it is evidently able to hold in solution whatever accidental excess of either of the two constituents may originally have been present. That the combination is not a very firm one may be inferred from the readiness with which it may be broken up.

In the case of camphor and salol, our correspondent reports the fact correctly. Salol is a salicylate of phenol (representing about 38 per cent of carbolic acid). On triturating it with camphor, a more or less liquid mass results, in which the salol is evidently undecomposed; for, on treating the liquid mass with solution of carbonate of sodium, not a trace of salicylic acid is taken up.

At present it is not possible to give a rational explanation regarding the nature and constitution of these compounds, except by way of theory, which would serve no practical purpose here.

Formulæ Asked For.

Can any of your readers furnish the formula of Hair's Asthma Cure?